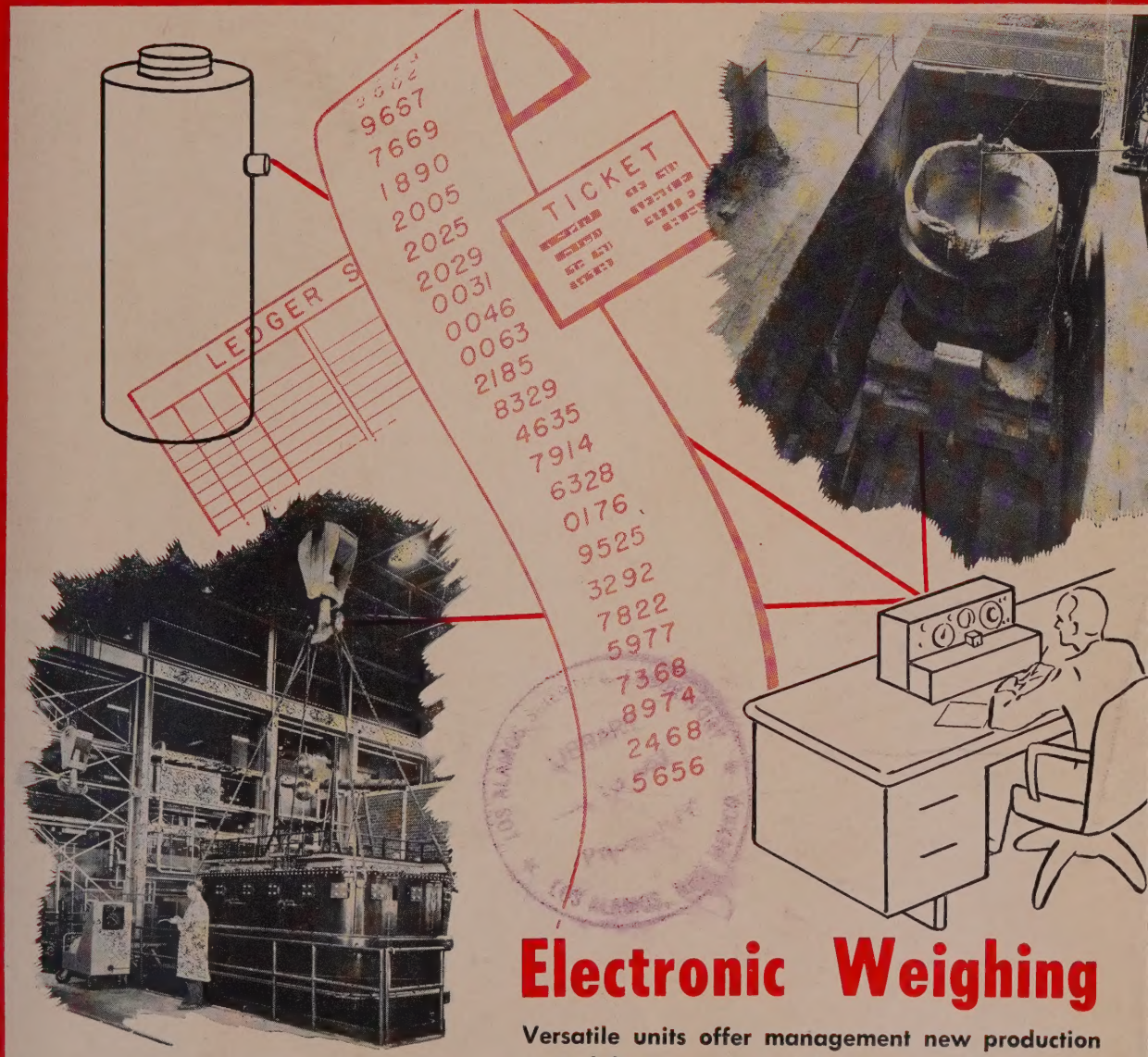
AUGUST 17, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



Electronic Weighing

Versatile units offer management new production control from raw materials to end product, p. 110

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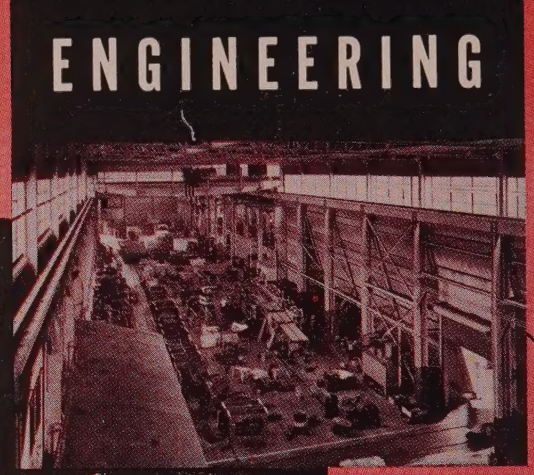
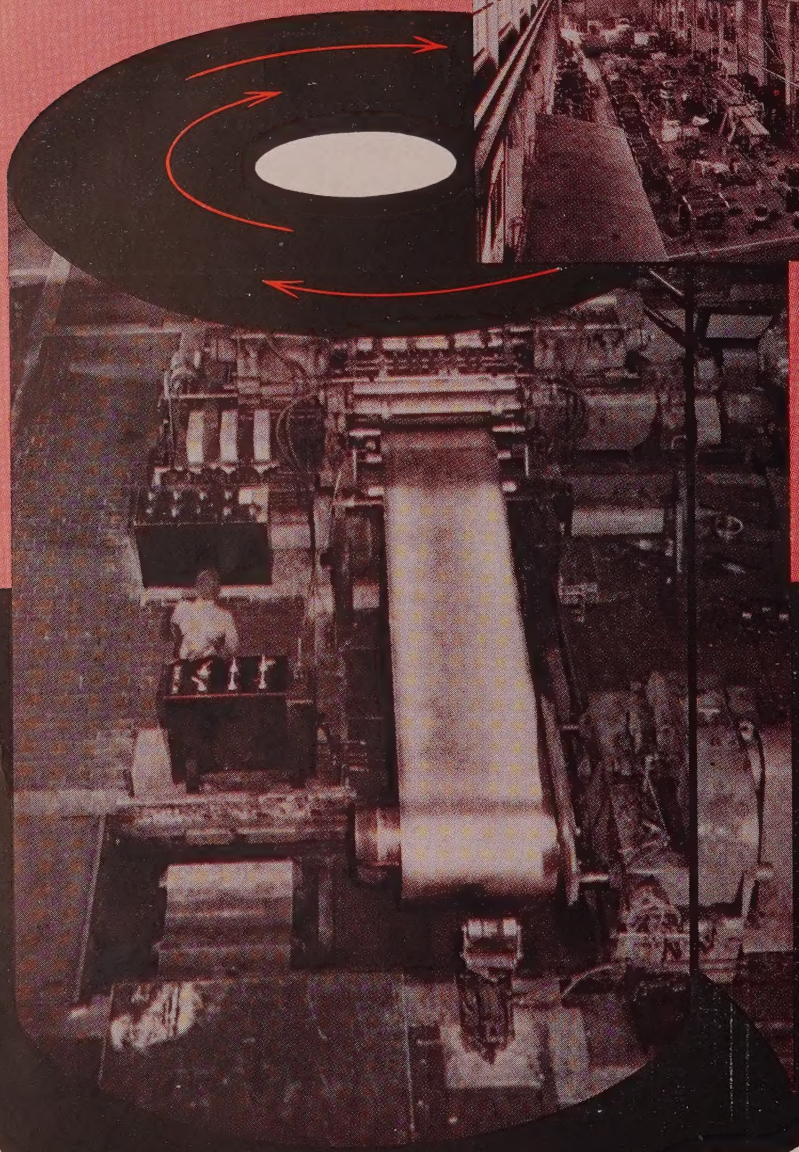




Leading Enginee
and Builders
of

FLAT-ROLLED
FINISHING
EQUIPMENT

ASSOCIATED COMPANIES

Head Wrightson Machine Compan Middlesbrough, England—Great Finland, Sweden, Norway, Denmark of South Africa, Northern and S Rhodesia.

Aetna-Standard Engineering Compa Toronto, Ontario, Canada.

M. Castellvi, Inc., New York, N. Y.— Central and South America.

Societe de Constructions de Montbar France—France, Belgium, Holland, bourg, Switzerland.

Demag Aktiengesellschaft, Duisbu many—Germany, Austria, Yug Greece, Turkey, Egypt.

Compagnia Italiana Forme Acciaio, Italy—Italy.

Aetna-Japan Company, Ltd., Tokyo, Japan.

Hale & Kullgren, Inc., Akron, Ohio sentative for the Rubber Industry.

Designers and Builders to the Fe
Non-Ferrous, Leather and Rubber I

Aetna-Standard

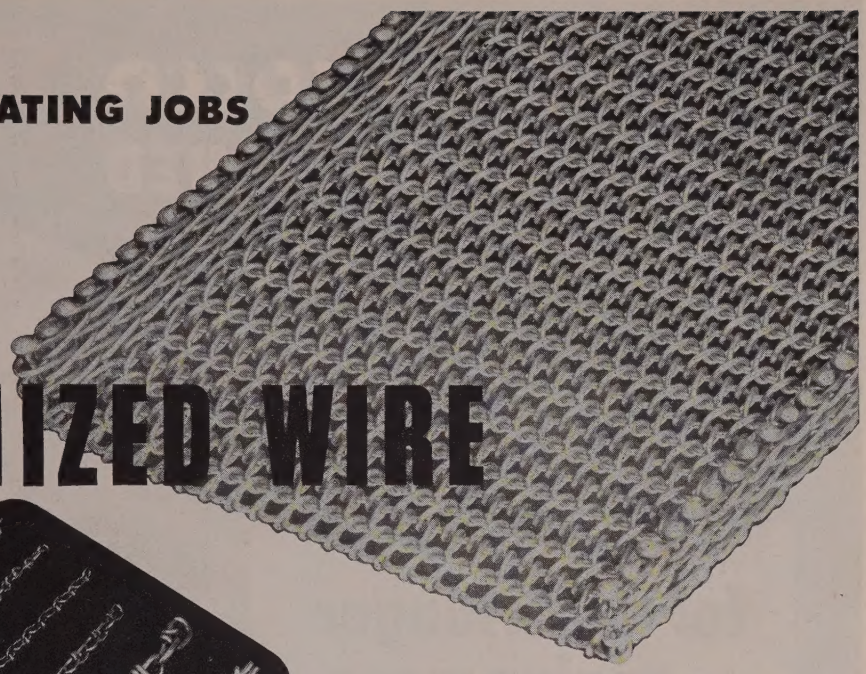
THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

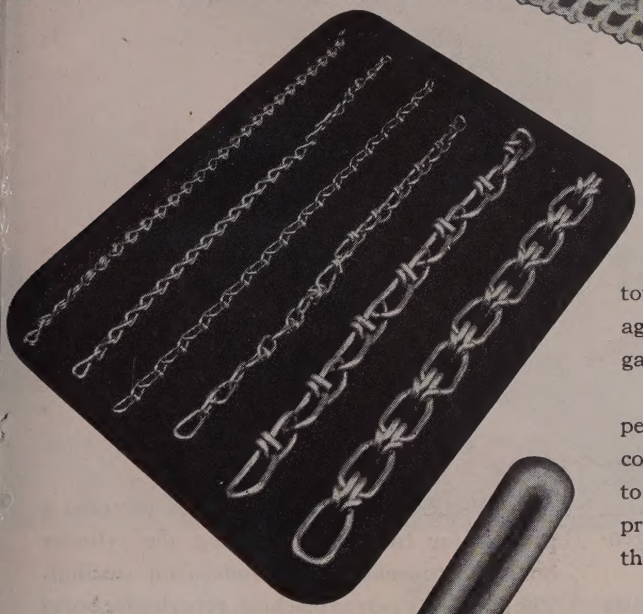
Plants in Warren, Ohio · Ellwood City, Pennsylvania

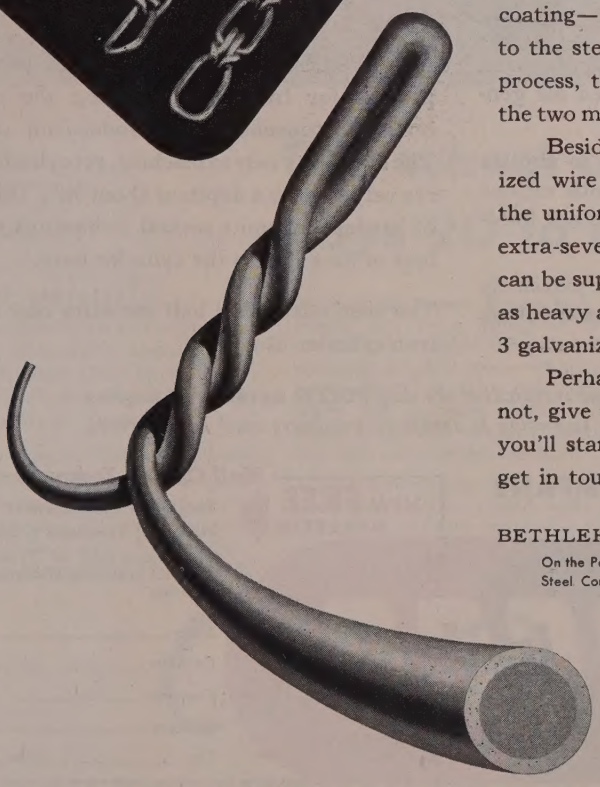
SEVERE FABRICATING JOBS

CAN'T HURT

BETHANIZED WIRE







Here's a zinc-coated wire that comes through the toughest fabricating operations with coating undamaged. Twist it, bend it, form it—even draw it to fine gage—and the zinc stays put on bethanized wire.

Bethanized wire works easily without flaking or peeling because of the remarkable ductility of the coating—99.9 pct pure zinc—and its tight adherence to the steel base. Applied by an advanced electrolytic process, the zinc is locked so tightly to the steel that the two metals—zinc and steel—become practically one.

Besides being able to take severe forming, bethanized wire has superior resistance to corrosion, due to the uniformity and purity of the coating. And where extra-severe corrosive conditions exist, bethanized wire can be supplied with a coating weight up to three times as heavy as the coatings specified in conventional Type 3 galvanizing.

Perhaps you're already using bethanized wire. If not, give it a tryout. Chances are you'll like it so well you'll standardize on it. For more information, please get in touch with the nearest Bethlehem office.

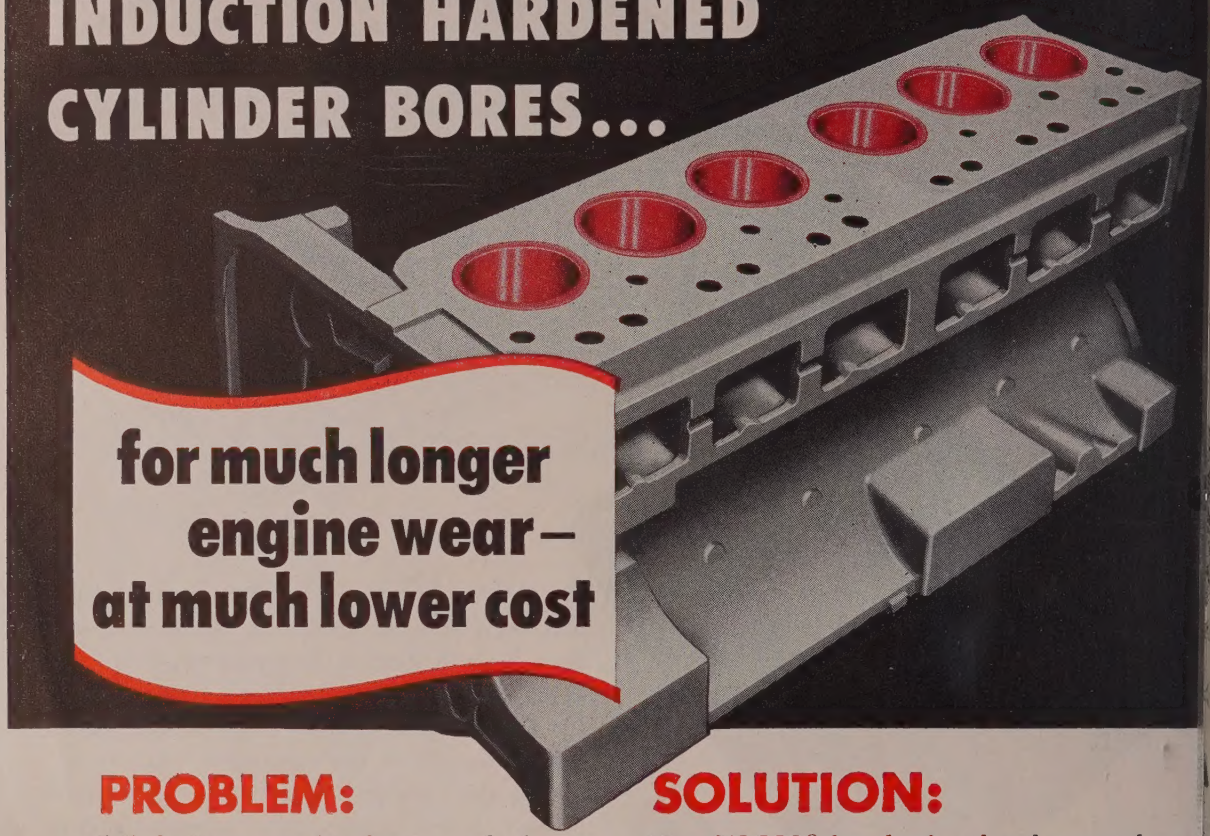
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

★ BETHLEHEM STEEL ★

Another TOCCO® *First!*

INDUCTION HARDENED CYLINDER BORES...



for much longer engine wear— at much lower cost

PROBLEM:

Cylinder liners cost a lot of money, and, of course, they take up space that could be used for generating extra horsepower.

As a result engine builders, hoping to abolish the need for liners, experimented with various hard alloy irons that can furnish desired hardness in the cylinder bores.

However, these hard castings were extremely difficult to machine, and they cost several dollars per casting extra.

SOLUTION:

Now TOCCO® has developed and patented a process for Induction-hardening the cylinder bores of conventional, cylinder-iron castings. The blocks are easy to machine, yet cylinder bores are very hard to a depth of about 1/16". This depth of hardness permits several re-honings with no loss of hardness in the cylinder bore.

The cost?—less than half the extra cost of alloy iron cylinder blocks.

This important development is typical of the way TOCCO works hand-in-glove with the Metal Working Industry to improve products and lower costs.

see our catalog
MACHINE TOOL CATALOGS
or write for co

THE OHIO CRANKSHAFT COMPANY

TOCCO

*Trade Mark Reg. U. S. Pat. Off.

NEW **FREE** BULLETIN

Mail Coupon Today

THE OHIO CRANKSHAFT CO.
Dept. S-8, Cleveland 1, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating"

Name_____

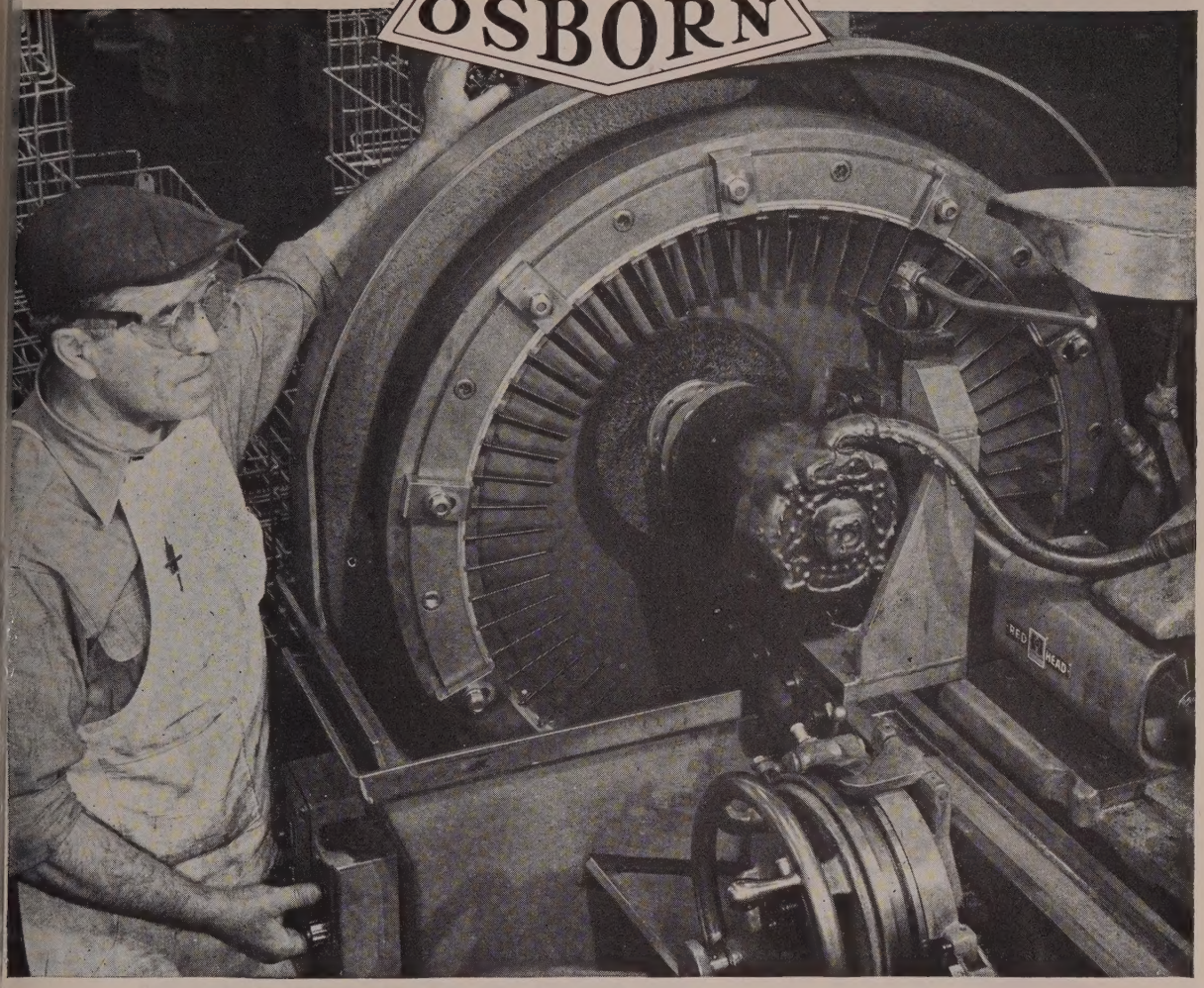
Position_____

Company_____

Address_____

City_____ Zone____ State____

OSBORN



This wheel of fortune pays 20 to 1 on every turn

In one minute this machine does a job that formerly required 30 minutes! It shows what *you* can do with new OSBORN Power Brushing techniques to speed *your* production and cut costs.

The job consists of deburring ends of stainless steel blades of a jet engine stator assembly. Chucked up in a grinder, as shown, the assembly rotates counter-clockwise at 20 rpm. An 8-inch grinding wheel grinds the ends of the vanes. Burrs and feather edges are then removed by two OSBORN 10-inch Monitor® Brushes rotating at 2800 rpm—45 seconds in each direction. The complete cycle takes 1½ minutes. Vane ends are made uniformly smooth, 20 times as fast as former hand method.

The answer to *your* production problems may be found with special Osborn-equipped machines such as this . . . or with one of the Osborn Brushing Machines which are being used in scores of plants for high-speed deburring. For *any* problem in deburring, cleaning and finishing, start tackling it with the powerful experience of your **O**sborn **B**rushing **A**nalyst. Call him or write *The Osborn Manufacturing Company, Dept. G-9, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

FREE: New booklet on deburring with Osborn Power Brushing. Write for your copy.

Osborn Brushes

OSBORN POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

EASY AS ONE..TWO..THREE

count 'em and toss 'em in!

That's all there is to it when you use Tennessee Products ferromanganese and ferrosilicon briquettes for your cupola charge. Briquettes contain exact amounts of these ferro alloys. They eliminate tedious weighing and facilitate rigid product control for faster, more economical foundry operation.

Ferrosilicon is available in lump, sized and powder form as well.

TENNESSEE also makes low phosphorous pig iron and high grade malleable pig iron for the metal industries.

For complete details contact Tennessee Products & Chemical Corp., First American National Bank Building, Nashville 3, Tennessee.

TENNESSEE
PRODUCTS & CHEMICAL
Corporation
NASHVILLE, TENNESSEE

This Week in Metalworking

STEEL

Vol. 133 No. 7 August 17, 1953

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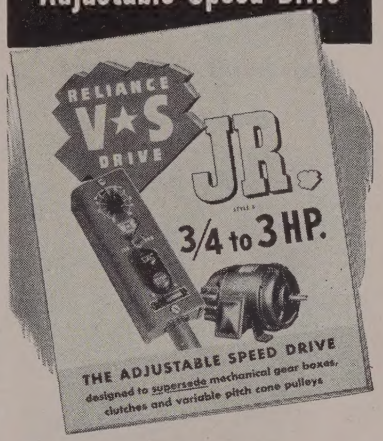
STEP UP PRODUCTION OF SMALL MACHINERY, TOO! ...with this All-Electric Adjustable-Speed Drive



Eliminate mechanical gear boxes, clutches and variable-pitch cone pulleys..

SAVE MONEY 10 WAYS!

- Boosts output
- Cuts down rejects
- Reduces "down time"
- Cuts changeover time
- Handles more jobs
- Saves Space
- Simplifies machine design
- Reduces operator fatigue
- Increases safety
- Operates from a-c.

Already the Reliance V★S Jr. has brought the benefits of smooth, powerful starting . . . wide speed ranges . . . smooth, fast reversing . . . quick, smooth stopping . . . to users in many industries. Find out today what the V★S Jr. can do for you! D-119

GET THESE FACTS!

New 12-page bulletin contains dimension data, drive characteristics, operating features, applications, components, operating principles. Ask for Bulletin D-2102.

Sales Representatives in Principal Cities

RELIANCE
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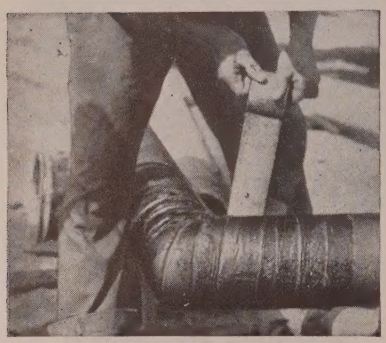
ENGINEERING CO.
1081 Ivanhoe Road • Cleveland 10, Ohio

"Motor-Drive is More Than Power"

TO COMBAT CORROSION

Specify TAPECOAT®

...the Original Coal Tar Tape Protection for Pipe, Pipe Joints, Couplings and Tanks



TAPECOAT is a coal tar coating with a tar-saturated, close-woven fabric as a carrier for easy application, providing a *natural* protection against corrosion.

TAPECOAT serves as both bond and protection...requires no foreign adhesive.

TAPECOAT resists moisture, acids, alkalis, soil stress, electrolysis, chemical fumes, fly ash, salt water, salt-laden air, barnacles and other severe corrosive and abrasive conditions.

TAPECOAT is clean to handle and easy to apply by spiral or "cigarette" wrapping with the use of a torch to bleed the coating for a bond to the surface. It cuts maintenance and replacement costs.

SIZED TO THE JOB

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths to meet varying requirements.

TAPECOAT has proved its dependability for gas and oil companies, railroads, telephone companies, air lines, ship builders and operators, water and sewage works, chemical and industrial plants, engineers and contractors... in combating corrosion both underground and above ground.

PROVED IN SERVICE SINCE 1941

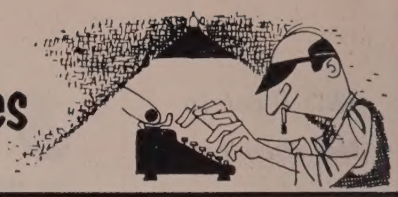
Write for descriptive brochure and prices

The* TAPECOAT *Company

Originators of Coal Tar Tape Protection

1543 Lyons Street, Evanston, Illinois

behind the scenes



Perfect Squelch

If you have been reading *Mirrors of Motordom* in STEEL each week for the past few months, you will know that Floyd Lawrence, author of that column, has been test-driving a new and different car each week and reporting his impressions of it.

When Floyd pulled off this master deal for getting on-the-house transportation, we figured the guy had it made. We figured without Floyd's neighbors, however. Seeing him roll up to the house in a fancy new car week after week . . . and each time a different make and model . . . they got to wondering if perhaps their new neighbor was an eccentric millionaire with a child-nurtured love of new toys or perhaps a fence for a local car-jacking syndicate.

Before tipping off Captain Braddock of the *Racket Squad,* one of the more bold block-dwellers decided a third degree was in order. He stopped Floyd one evening as he was dragging his worn and weary body from the plush comfort of his car-of-the-week and asked, "Say Lawrence! Don't aim to be nosey. Just been wondering what's with all these fancy jalopies? Are you in the used car business?"

"Not exactly," answered Floyd, who incidentally was a mite irritated by the man's neighborliness, "I just give the business to the cars I use."

Know This Fellow?

A wee while back we gave you a brief description of the average STEEL reader as developed by Newman Ladabouche, our long and lean market researcher. Lad has been slipping his slide stick again and this time he's come up with a picture of "the average man." Let me introduce you to him.

He's 39 around the chest, 40 around the waist, 96 around the golf course, and a nuisance around the house. He gets up first in the morning, is second at the morning newspaper, third in the bath room and last getting on the bus.

He drinks three cups of coffee per day, has bacon four days a week, passes up French fried potatoes at lunch and eats pie a la mode to bridge the gap until dinner. He has three false teeth, five fillings, one small cavity . . . usually in his bank account.

He contributes regularly to his pastor, congressman and poker friends. Takes reducing exercise and holds in his stomach when people look like they are going to tell him he's fat. He's supposed to live to be 74 but figures "what's the use."

If he's a metalworking man, chances are he reads STEEL.

Professor Puzzler

The professor puzzle of July 27 found three readers in photo finish with the right answer.

Solution: A, B and C are the three professors. A reasons as follows: "Since B laughs, he thinks his face is clean. Since he believes that, if he saw that my face was clean also, he would be astonished at C's laughter, for C would have nothing to laugh at. Since B is not astonished he must think that C is laughing at me. Hence my face is black."

Thank you Messers John Burgeson of Youngstown Welding & Engineering Co., Youngstown, Joseph R. Defazio of Banks Moreland Co., Houston, and M. S. Bailey of Machine Products Corp., Quebec.

Polynesian Puzzler

The Polynesian Puzzler of August 3 had "Old Faithful" L. D. Rice of Timken Roller Bearing Co., Canton, beating out A. J. Hauliech and W. E. Hellman of Kropp Forge Co., Chicago, for first money.

Solution: There are actually two possible answers:

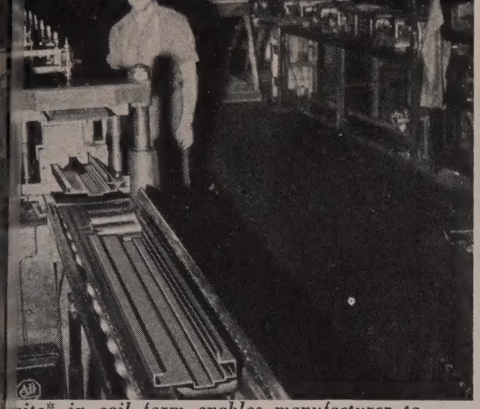
Abl—Arbu		Abl—Bosnin
Bsl—Arbu	(or)	Bsl—Arbu
Crl—Bosnin		Crl—Bosnin

Here's a Quickie!

Three men play a game with the understanding that the loser is to double the money of each of the other two. After three games, each has lost just once and each ends up with $24 00. With how much did each of the three men start?

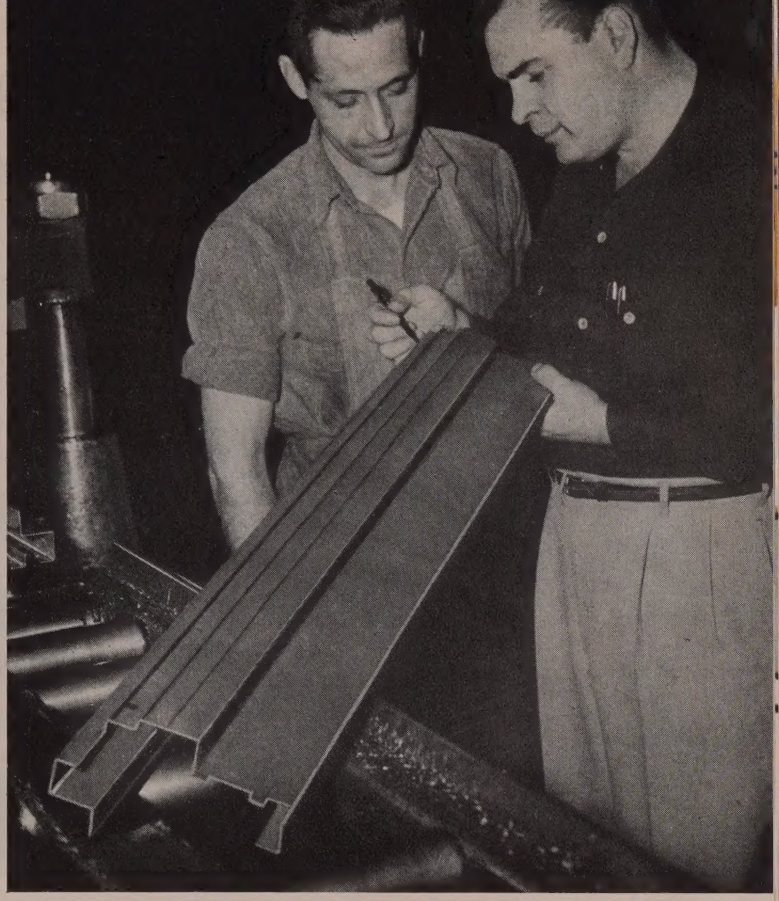
Shrdlu

(Metalworking Outlook—Page 59)



nite in coil form enables manufacturer to e tremendous production at minimum costs.*

e special window casement sections, fabricated alvanite, ingeniously lock together to form lete weather-tight casement.*



Plant foreman for one of the nation's largest window manufacturers points severe bend that caused many inferior coatings to flake. Galvanite licked t problem for them.*

HY LEADING WINDOW MAKERS LIKE RUST-RESISTING GALVANITE..

wonderful thing about Galvanite*, Sharon's high lity zinc coated steel, is the way the coating stays h the base metal through the most severe fabricating erations. This is because Galvanite* is a special process dip type coating which causes the zinc to actually bond h the steel.

example, Galvanite* has a wide acceptance in the nufacture of steel windows, doors and casings . . . for e they must have a steel that will resist the weather for ars on end, take paint easily and hold it while subject the abrasions of normal window operation. Many of se window manufacturers tried several types of coated el before "discovering" Galvanite*, but actual on-the-job ts quickly proved the superiority of this excellent steel.

hether your business is windows, or the manufacture of y other product that demands top quality weather-resisting steel it will pay you to look into the Galvanite story. Sharon steel specialists will be happy to work wit you, at your convenience, in applying Galvanite* to yo product. We're sure that once you use it, you, as hundrec of others, will specify Galvanite* every time. It's th much better!

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rade name copyrighted by Sharon Steel Corporation

herever There's Weather — Specify GALVANI

Johns-Manville announces the development of new **SIL-O-CEL 16L** *Insulating Fire Brick . . .*

Lompoc, California, where Johns-Manville mines and processes diatomaceous silica insulating materials

Combines outstanding physical and thermal properties for furnace service to 1600F

Check these properties of SIL-O-CEL 16L

Maximum service temperature	1600F, back-up or exposed
Approximate density	33-35 lb per cu ft
Transverse strength	60 psi
Cold crushing strength	350 psi
Linear shrinkage	0.7 percent at 1600F
Reversible thermal expansion	less than 0.1 percent at 1600F
Thermal conductivity (Btu in. per sq ft per F per hr at indicated mean temperatures)	0.92 at 500F 1.07 at 1000F 1.22 at 1500F

1—has less than 0.1% reversible thermal expansion at 1600F

2—provides high load-bearing strength

3—for direct exposure or back-up service

Here is a new development of Johns-Manville insulation and refractory research. Its exceptional characteristics provide important savings in furnace construction. Made of diatomaceous silica, Sil-O-Cel* 16L Insulating Brick is light in weight . . . has low thermal conductivity . . . high structural strength. And where furnace linings are subjected to severe heat shock or where high load-bearing properties are needed, Sil-O-Cel 16L offers outstanding performance.

Sil-O-Cel 16L is now available. Samples will be sent on request. Also available without obligation is Booklet IN-115A, which describes Sil-O-Cel 16L and other J-M Insulating Brick and Insulating Fire Brick for service to 3000F. Write Johns-Manville, Box 60, New York 16, N.Y. In Canada, 199 Bay Street, Toronto 1, Ontario.

*Sil-O-Cel is a Johns-Manville registered trade mark

Replaces SIL-O-CEL Natural Brick

The development of Sil-O-Cel 16L Insulating Brick has resulted in the discontinuance of Sil-O-Cel Natural Brick. The outstanding properties of Sil-O-Cel 16L make it the ideal replacement for Sil-O-Cel Natural Brick for back-up use. In addition, the properties of Sil-O-Cel 16L Brick extend its use to exposed service applications.

Johns-Manville *FIRST IN* INSULATION

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NATIONAL METAL CONGRESS

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For America's most honored *Guests*

At no other place and at no other time in 1953 will the power and vitality and productive genius of the vast and basic metals industries of America be so forcefully and so clearly demonstrated as in Cleveland's Public Hall this October.

Here . . . in bold, animated, live-action display will be the newest . . . the finest . . . the most wanted developments . . . and here, too, will be the alert, the wise, the idea-seeking men who make the metals industries go forward.

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Cleveland Ohio Oct. 19-23

UNIFORMITY . . . from start to finish with KEYSTONE "SPECIAL PROCESSED" COLD HEADING WIRE

When you use Keystone "Special Processed" Cold Heading Wire, you get uniform response every step of the way through forming, trimming, threading and final heat treatment.

Uniform, strength-giving grain flow characteristics are clearly indicated in the above macrograph of a high-strength cap screw made from Keystone "Special Processed" C1035 Cold Heading Wire. The long, continuous fibres tell the "inside story" of efficient cold heading which results in longer die life, lower production costs and finished products of the highest quality.

INDUSTRIAL WIRE SPECIALISTS

Keystone Steel & Wire Company
PEORIA 7, ILLINOIS

LETTERS
TO THE EDITORS

More Mail for Milo

I am getting quite a few "responses" to the item "Which Milo Gets the Mail?" in the June 20 "Behind the Scenes" column. It certainly has attracted wide attention, both in the *Chicago Tribune* and in your good publication. Thanks for the publicity!

Milo E. Smith
Chicago Bridge & Iron Co
Chicago

Oxygen Enriches Bessemers

This organization produces for the benefit of its steel committee a paper describing the more recent developments which take place from year to year in the steel industry.

The advancement of the various methods of oxygen enrichment in steel converters is obviously one development of considerable interest and we would like to make use of your article "Oxygen-Enriched Blast Steps Up Bessemers" (July 6, p. 112) in our program.

O. F. Reichwald
Steel, Engineering & Housing Section
Industry Division
Economic Commission for Europe
Palais des Nations
Geneva, Switzerland

• *Permission granted.—ED.*

Skelp Mill Story Is Out

One of our men has called my attention to an article which he mentioned STEEL either plans to publish or has already published on the skelp mill furnace at Wheeling Steel Corp. I would appreciate knowing when this article is scheduled to appear or has already appeared.

William P. Gibbon
advertising manager
Industrial Products
Johns-Manville Sales Corp
New York

• *The article appeared in the June 29 issue on p. 98.—ED.*

Corrosion in Fire Equipment

In connection with building fire trucks we have always used black iron pipe in the connections between the fire

Please turn to page 12

A Fast Start!

ctured above are some of the llis-Chalmers control instal- tions at Granite City Steel.

eft — *Regulex* amplifier ex- ter sets provide sensitive ntrol for variable voltage dc ives.

enter — Constant voltage ntrol panels for dc auxiliary rives.

ight — Liquid rheostat pro- des stepless speed control for 000-hp m-g set.

Regulex is an Allis-Chalmers trademark.

NEW GRANITE CITY "BLOOMER" GOES INTO PRODUCTION WITHOUT SHAKEDOWN

All control for main and dc auxiliary drives in the new blooming mill at Granite City Steel was supplied by Allis-Chalmers. Significantly, near capacity production started immediately . . . without a costly shakedown. In fact, eight days later the old mill was taken out since it was apparent that standby equipment was not needed.

Noteworthy, too, is the fact that the installation was completed *on time*. Controls were factory assembled, thus simplifying and speeding installation.

Progressive Granite City Steel has standardized on Allis-Chalmers electrical equipment in its large expansion program. The recently completed blooming mill is the first stage in a three-stage plan. When completed, this realistic, farsighted expansion will push production to well over a million ingot tons annually.

Why not put Allis-Chalmers skill and experience to work for you? Call your nearby A-C steel mill representative or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4114

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

When Jobs Reach PROCESS ENGINEERING . . . Call FEDERAL for GAGE ENGINEERING

Complete Set of Gages . . .
Engineered by FEDERAL for Inspecting the Working Parts of an Automobile Sub-Assembly

Photo shows Gages for use at production and at final inspection. All these Gages were engineered directly from customer's Process Sheets and were designed from the sample parts shown and from blueprints. Each Gage checks a different dimension and is shown with its *single* master (not *two*).

WHEN YOU *START* TO PROCESS YOUR JOBS, that's the time to take advantage of our years of experience in designing every sort of dimensional visual gage. Our engineers know how to set up your gaging requirements and save you time and money.

At Federal we know the basic difference between designing and building precision gages and designing other mechanical products. Designing precision gages requires knowledge of how to *magnify* and *transfer* measurement variations *precisely*, without *loss* of motion — with a minimum of *friction* and *inertia* in the working parts — and a hundred other details which do not concern the usual tool and machine designer.

No matter whether it's an Air or Automatic Gage or a Dial Indicator type, there is every reason you should get better gages if Federal designs and builds them. Call in Federal when you *start* processing a job and let us engineer your gages for you. Federal Products Corp., 1218 Eddy Street, Providence 1, Rhode Island.

FEDERAL

Largest manufacturer devoted exclusively to designing and manufacturing *all types* of DIMENSIONAL INDICATING GAGES

LETTERS

Concluded from page 10

pump and hose reels. We recently had a customer state that galvanized was far superior for that purpose. To satisfy this customer we installed the galvanized pipe. It is our opinion that the black pipe will hold up and give the same service as galvanized will, the only difference being with the galvanized pipe the water will be clearer and cleaner as no rust will show up. We will appreciate your opinion on this.

Harry T. Armington
general manager
Universal Fire Apparatus Corp.
Logansport, Ind.

• *It is our opinion that there is little doubt but what galvanized pipe will outlast ordinary black pipe in corrosive environments involving water and outside exposure. The zinc coating on the black pipe provides galvanic protection to the ferrous base material. From the theoretical standpoint there actually should be no corrosion of the steel base until all the zinc has been corroded away. While we can't argue with the fact that a galvanized part will last longer than a straight ferrous base part in most environments, the question facing you seems to be whether this additional corrosion resistance is needed. This will depend on whether your records show that corrosion of parts in service interferes with operation of your equipment.—ED.*

Aluminum Process Noted

Reference is made to the item "Electrolytic Alumina" (June 1, p. 107).

I would appreciate any additional information you might have on the process, including applicable patents, operating data, production figures, etc. In the event such information is not available from your records, will you please furnish the names of those companies or individuals who can provide additional information.

Bruce E. Brennan
supervisor, engineering data
Reynolds Metals Co.
Louisville, Ky.

• *The process is licensed through the Lobeth Corp. To obtain further information, write to Lobeth at 624 So. Michigan Ave., Chicago 5.—ED.*

Specs for Ductile Iron

Please advise if it is possible to purchase reprints of your article "Specification for Ductile Iron" (June 22, p.86). If so, please let us know prices in lots of 500 and 1000.

A. E. Schobec
president & general manager
Jamestown Malleable Iron Corp.
Jamestown, N. Y.

• *Reprints are available in any quantity you desire. Price depends upon quantity and arrangement. Our Reprint Department has sent full details.—ED.*

Keeping Costs in Line

Would appreciate receiving a copy of that fine article by Dr. A. G. Gray "Let Die Castings Help Keep Costs in Line" (July 6, p. 106).

Irving Bambrick
Room 1, Sheraton Plaza
Boston

• *Sent.—ED.*

Photos—courtesy
Robertson-Irwin Ltd., Hamilton, Ontario, Canada

Cincinnati ACCURATE Shearing and Forming . . .

for INDUSTRIAL . . .

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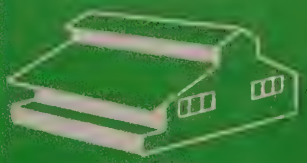
and FARM products . . .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is efficient production of quality products at
west costs—from flat sheet to finished product
ntrolled accuracy is the story.

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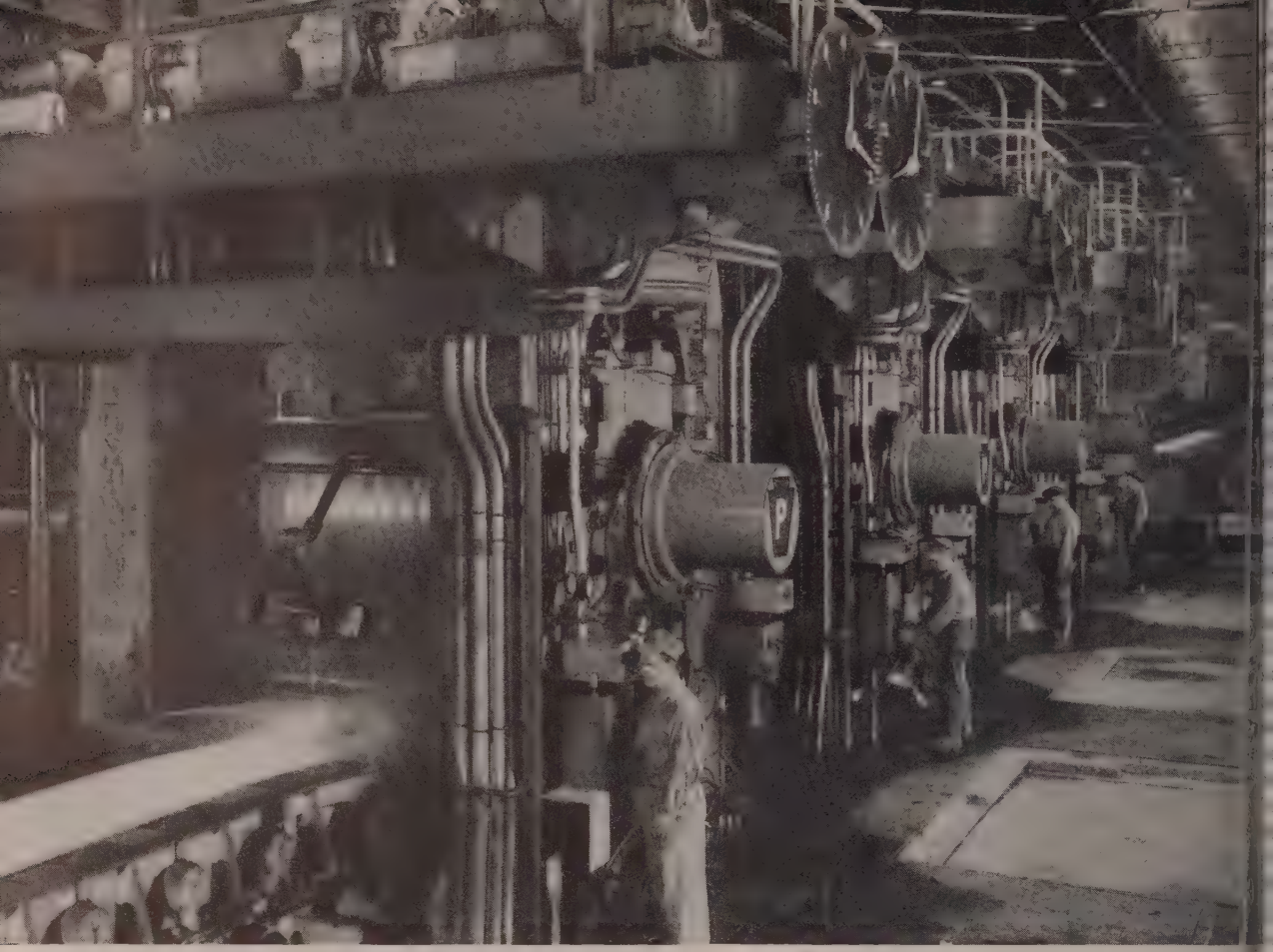
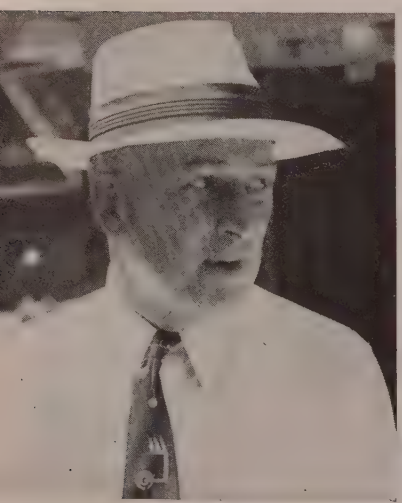


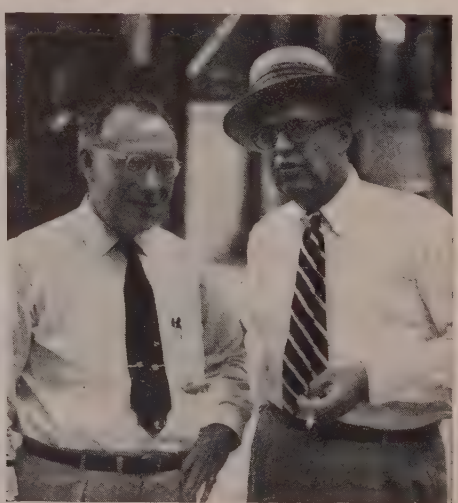
The First Slab is the tough one to roll on a brand new rolling mill. That's why . . .

It Takes Experienced Heads and Steady Hands to Control a Mechanical Marvel

Pittsburgh Steel Company, long known for quality tubular and wire products, adds a new line—flat rolled steel—unveils new $28-million hot sheet mill with veteran hot-mill men at the controls.



Veteran Steelman, Avery "Ave" Adams, President of Pittsburgh Steel, watches a three-year dream come true as new mill "proves in."



Up Through the Ranks, P. E. "Pete" Sance, Vice President-Operations, and E. M. "Milt" Barber, Executive Vice President, nod approvingly as first slab speeds through rolls.

In less than 180 seconds this ro
hissing, one-fifth of a mile lon
chanical marvel squeezes, roll
coils a 15-ton slab of red hot ste
clean sheet steel fractions of a
thick, 5 feet wide and over 1,0
long!

It's taken 27 years to build th
because it combines all the tri
proven machinery and methods
and adopted since the first mil
kind was built in 1926. Actu
struction took 20 months. Th
motors that drive the mill
enough electrical power daily
ply the domestic requirement
city of 200,000; enough water
35 million gallons) to serve
people daily. The mill covers
the size of seven football fields
dations took 42,280 cubic y
concrete—enough to provi

Advertisement

ment

ions for some 5,000 average
nes.
the high quality flat rolled
eets produced in this mill sell
ut 5 cents per pound (about
arter of what you pay for a
bread) to the various manu-
rs who fabricate thousands of
ts essential to your daily living.

orizons—The shipment of first
om this new 66-inch hot rolled
nill marks the entry of an old
nto a new business. Pittsburgh
with its long established reputa-
r quality steel, enters the sheet
usiness—with sheets as free
surface defects and physical
ies as excellent as modern ad-
s in science can produce.
ing through the rolling train is
steel for your comfort, conven-
and safety—steel for your auto-
e, for your electric and gas appli-
for construction machinery and
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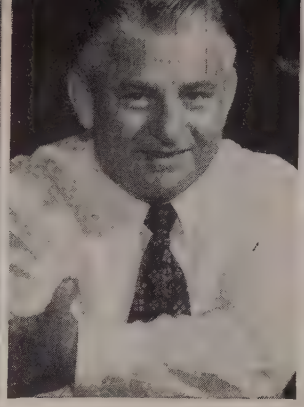
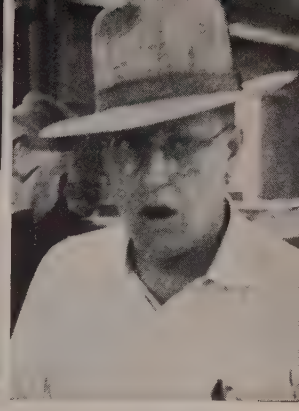
ime uses, and if need be, steel
e implements of war to protect
om aggressors.
e opening of this new mill means
urgh Steel is fast approaching
f its objectives in its Program of
ess: (1) *Balance* between its steel
ng capacity and its finishing fa-
s; (2) *Diversification* of its range
ducts.
e men who manage Pittsburgh
have worked hard to plan and
this mill, and put it into opera-
to serve you. They will see that
orders are filled as you want
, when you want them.

ll Builder, H. A. "Herb" Long, ief Engineer, and J. H. "Joe" Carter, ard Chairman, watch intently as hot b enters finishing train.

Coordinator, C. A. "Carl" Breuer, Assistant to Vice-President-Operations, sees new challenge as hot steel enters the smooth-running, reversing roughing stand.



"This Is It," grins J. E. "Joe" Simonin, Works Manager of the Allenport plant. In addition to the new sheet mill, he also has new seamless tube facilities under his wing.



"Let'er Roll," barks W. H. "Bill" Webb, Sheet-Strip Superintendent, as first slab starts one-fifth of a mile journey.

"We're In," yells veteran Rolling Superintendent Harry Finik, waving arms as roller, Anthony "Tony" Thomas, turns from control stand after first sheet steel passes test run.

"Let's Give a Look," says Art Beglinger, Assistant Rolling Superintendent, 47 years a rolling boss. First steel from the mill showed good clean surface quality, excellent physicals—a top-quality product for commercial use.

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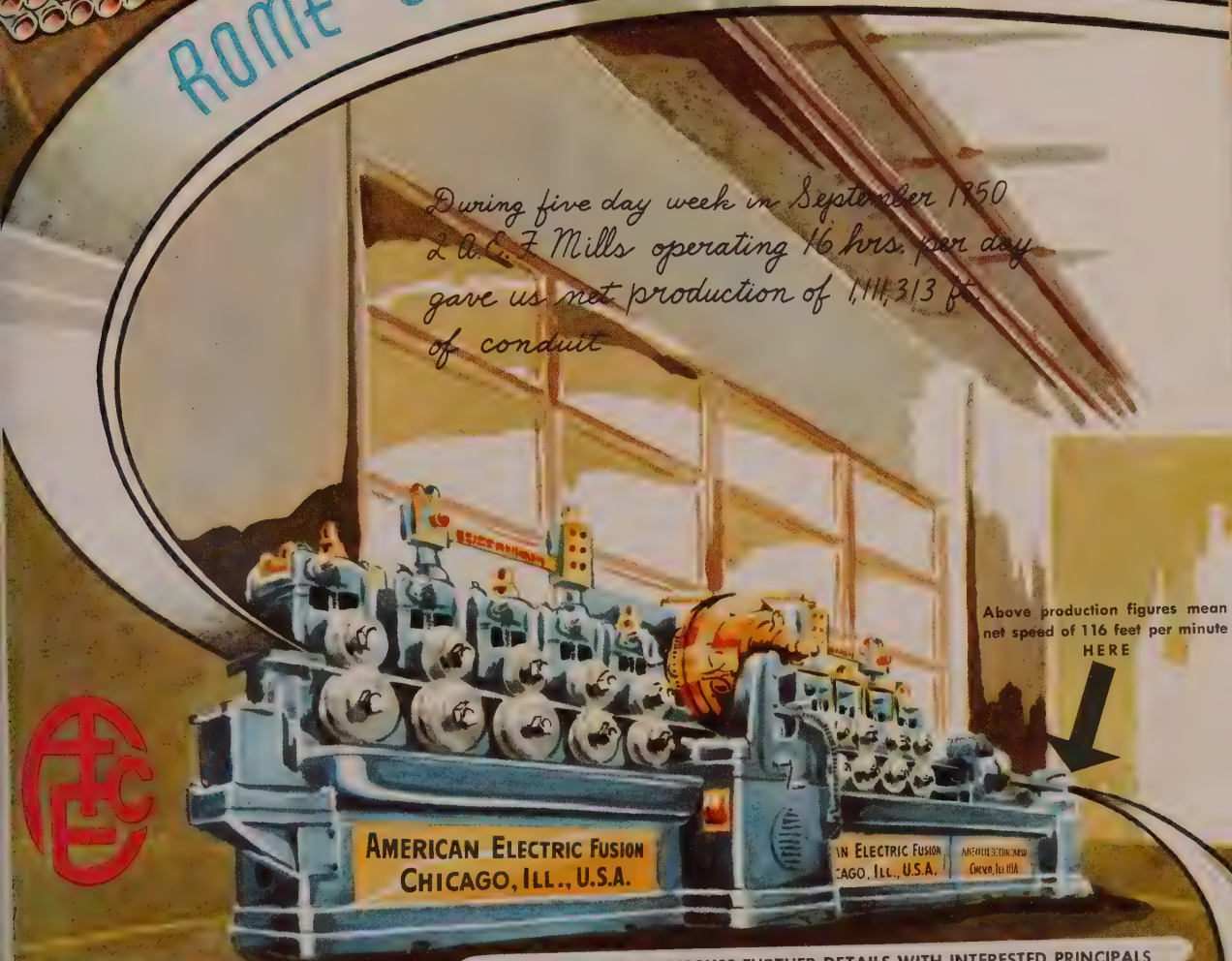

Above production figures mean net speed of 116 feet per minute HERE

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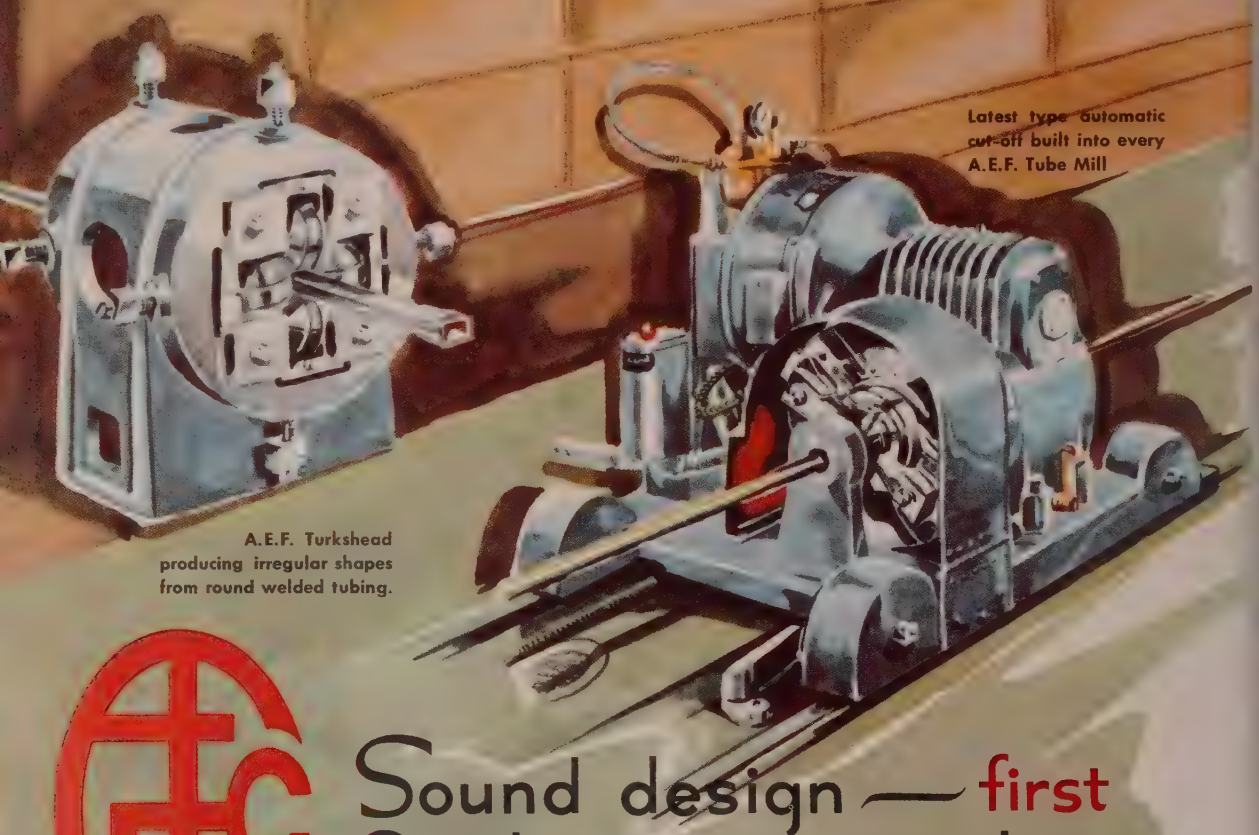

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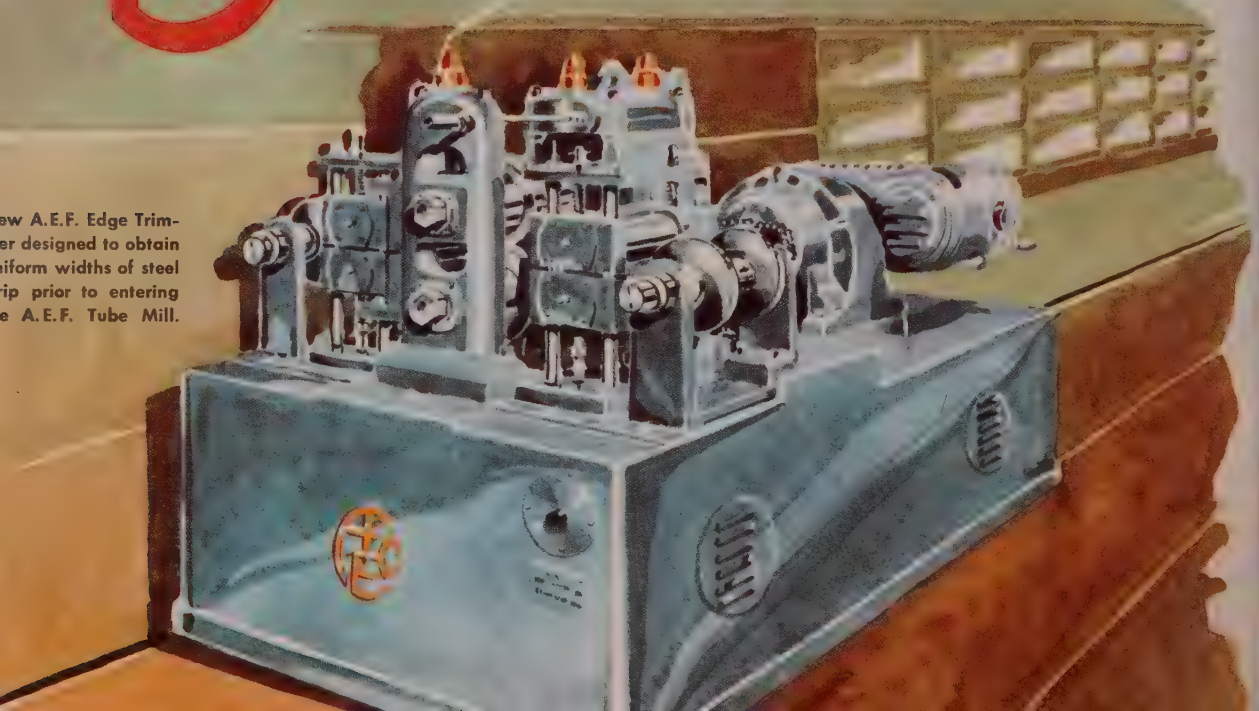

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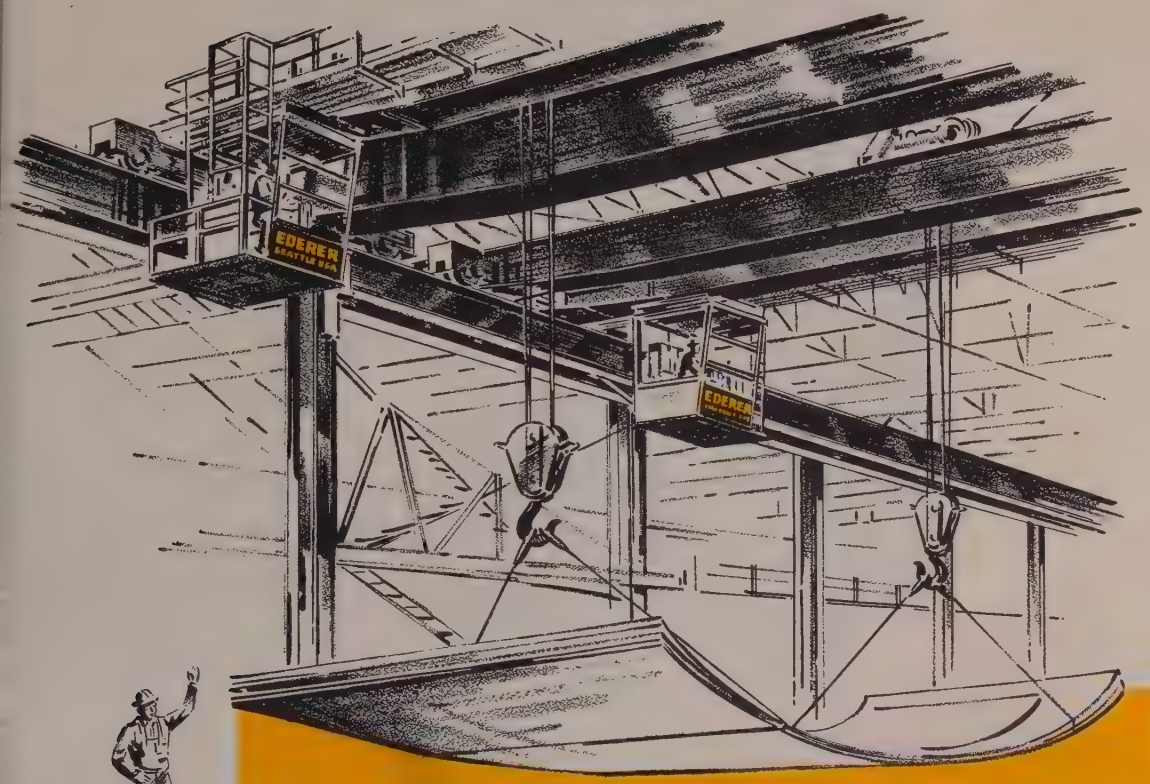

Two cranes move plate with the greatest of ease...

In the plant where these two 10-ton, 70-foot-span cranes are operating, there is frequent need for the "tandem" operation of both cranes in handling large size steel plate. At other times the two cranes operate independently. To fit the specific requirements of this operation, EDERER "job-engineered" the pair of cranes with synchronized speeds for the dual operation.

This designing and building cranes to the exact materials handling requirements of industry has made EDERER cranes perform with extra efficiency and economy. EDERER—one of the largest crane manufacturers in the West—can "job-engineer" a crane to your requirements.

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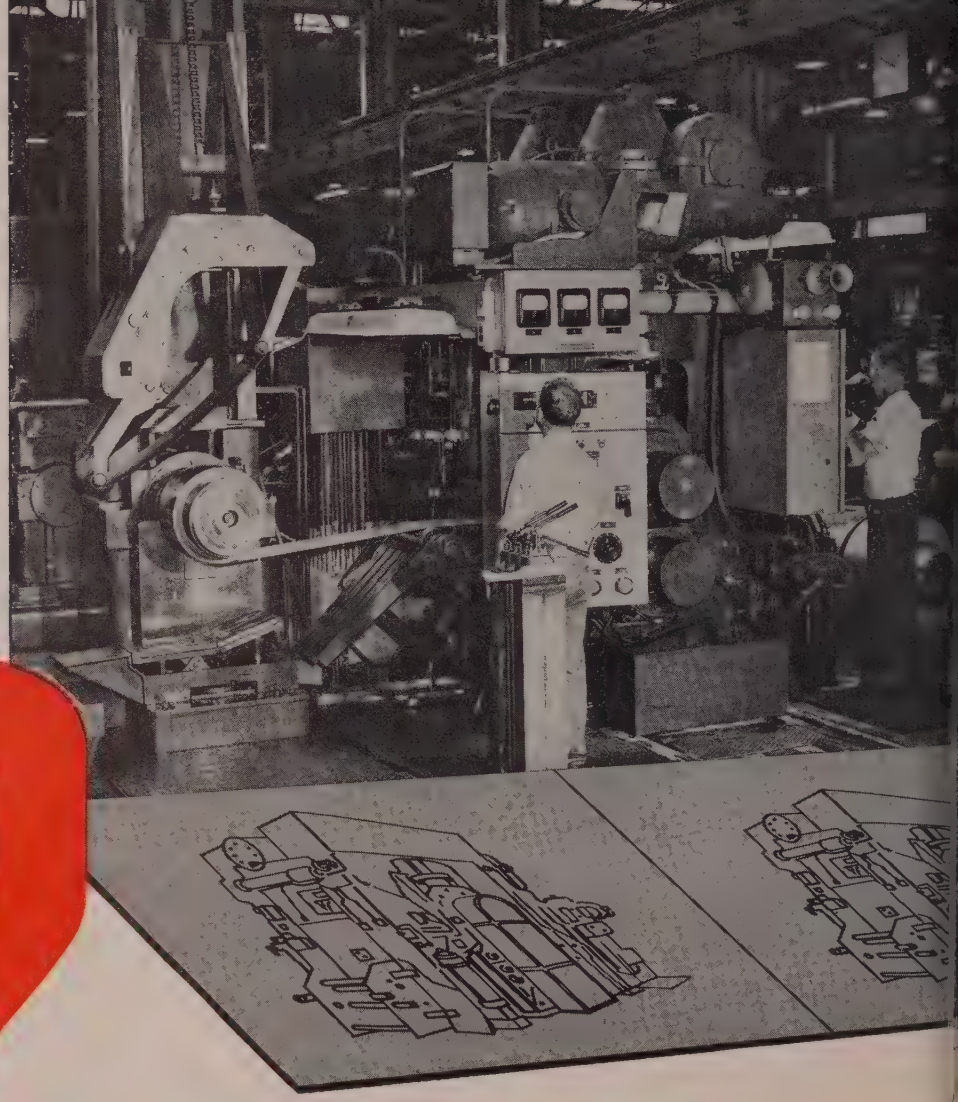


2 new BLISS mills

and do it better at Chase...

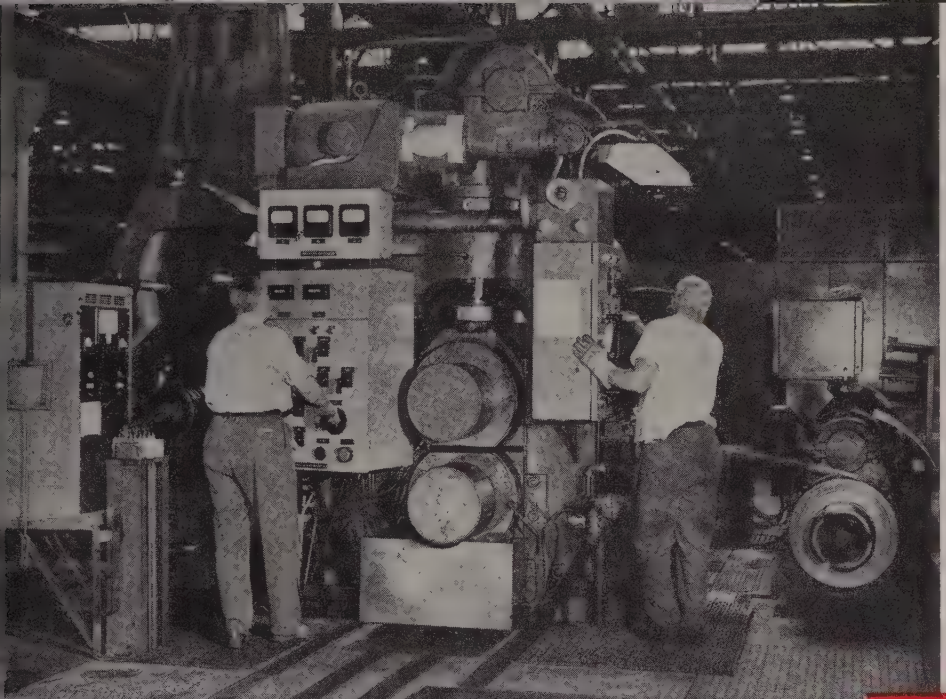
Higher production...closer tolerances...*less equipment*...all these are now a reality at the Chase Metal Works plant of Chase Brass & Copper Co., subsidiary of Kennecott Copper Corporation.

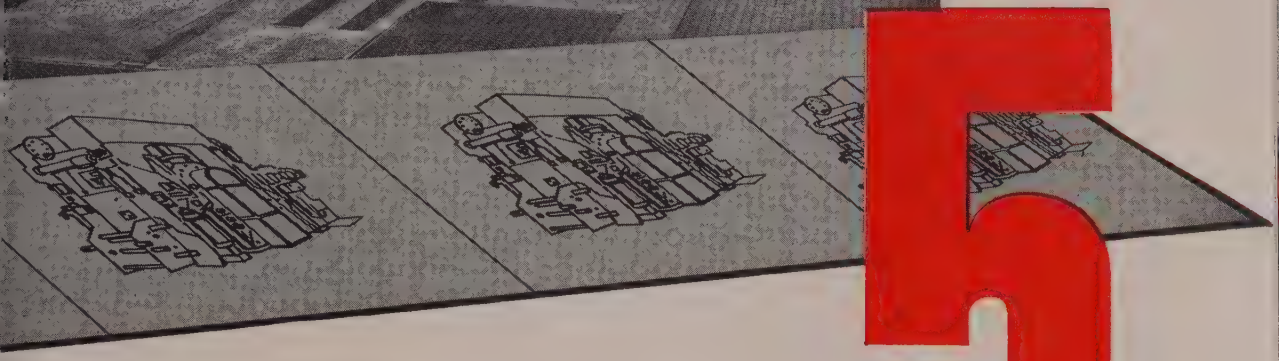
Chase wanted mills that would take a 50% reduction on brass strip at 500 fpm; and auxiliary equipment to handle coils weighing 200 lbs. per inch of width.

Bliss designed and built a pair of two-high mills, one 16″ x 16″ and the other 20″ x 22″, to suit various widths. Now quality and quantity of output from the new Bliss mills exceed that of the *five* old mills.

The Bliss mills run up to 1000 fpm and easily hold tolerances to 0.0005″; and these speeds offer quite an advantage on finish passes.

The 50% reduction made on Bliss mills is *twice* the amount possible on the old equipment. The Bliss units, with capacity of 200 lbs. per inch of width, handle 2400-lb. coils (for 12″ strip) on the





do the work of 5

16″ mill, and 3600-lb. coils (for 18″ strip) on the 20″ mill.

Bliss engineers sought carefully to include in the designs the desired characteristics of a mill suitable for reduction and finish rolling. The planished surface obtained is so good that further buffing is unnecessary.

If you have a rolling mill production problem, you'll find as Chase did—that it pays to call in Bliss. Take the first step toward increased production: write for your copy of the 52-page brochure, "Rolling Mills and Accessories," Bulletin 40.

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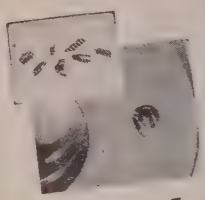
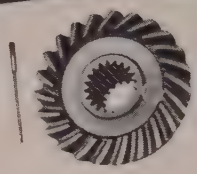
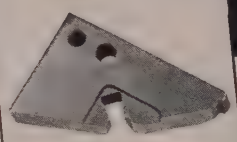


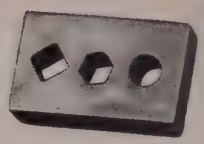
Remove Broken Taps fast without distortion



Cut oil holes in hardened gears without annealing



Cut dovetails in hardened dies



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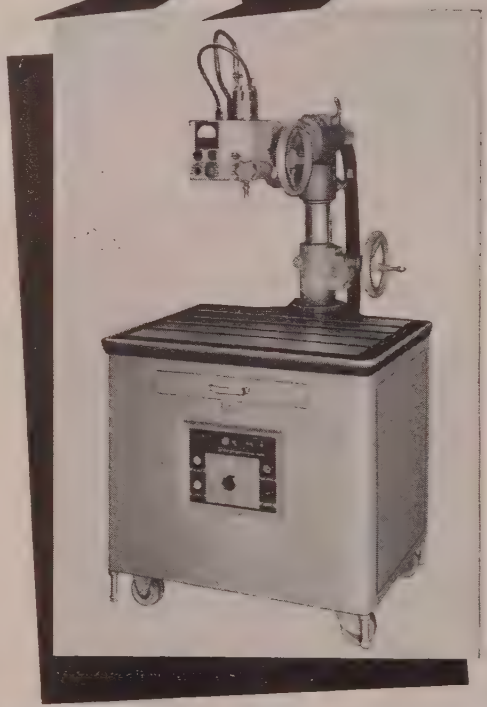

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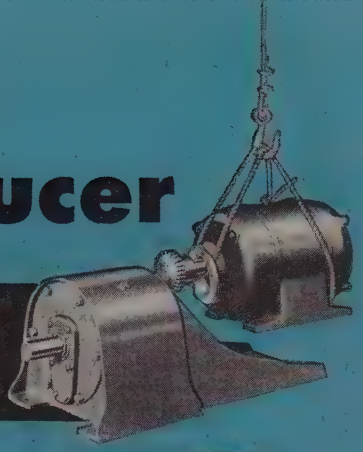
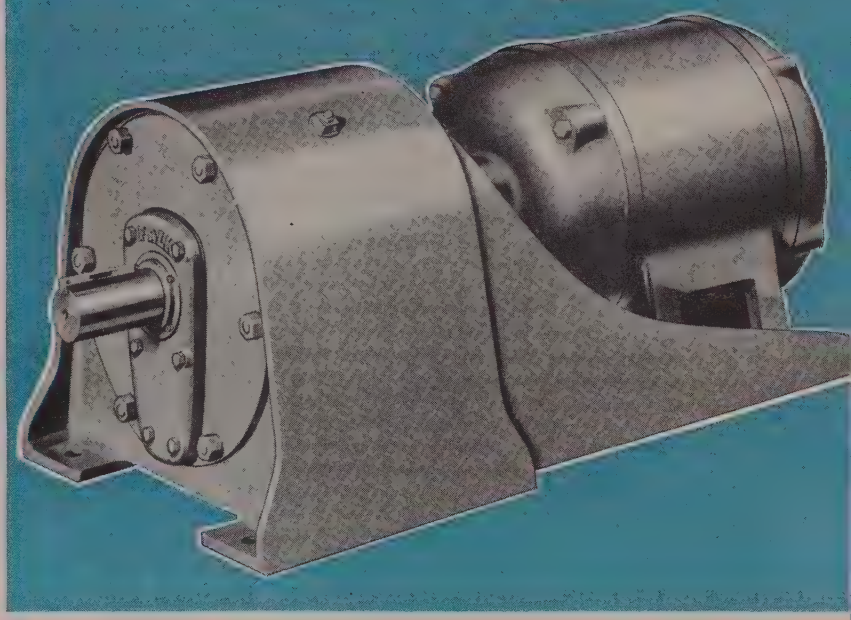


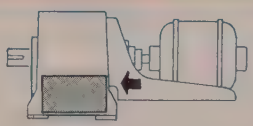


Fast, easy maintenance gives savings in time and money

With the *all-steel,* All-Motor type FALK Motoreducer . . . the only complete and compact motorized reducer with a separately mounted, resilient Steelflex coupling-connected motor . . . you can replace or interchange motors, or *even parts,* in minutes—*on the job,* without long and costly "down time"! Ratios can be changed (within capacity) without motor modification.

Any make, speed, or type of standard foot-mounted motor within the unit's AGMA rating is usable *without modification* on this All-Motor type Motoreducer. Motors with variable speed drive arrangement can be used, if desired. No "partial" motor or special shaft is required in event of motor replacement—simply use a complete motor, available for quick delivery from factory or local stocks without expensive delays.

Add to these exclusive maintenance-saving advantages the FALK "In-built" Factors, described at the right, and you have an unbeatable combination of quality, application adaptability, dependability, long-range economy, and dollar-for-dollar value. Write for Bulletin 3104.



Every FALK Motoreducer has these "In-built" Factors—

Positive Lubrication. Large sump capacity . . . oil-tight construction assures clean lubricant . . . direct dip of revolving elements provides positive lubrication at all speeds.

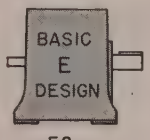
Wide Speed Range. Selective ratio combinations provide output speeds from 1.5 rpm to 1430 rpm with stock gears.

Streamlined inside and outside. Smooth, clean surfaces; machine welded construction conforms to NEMA motor frames.

Sealed Housings. Dual closures and one-way vents keep oil *in,* dust and moisture *out.* Units are splash-proof, leakproof, dustproof.

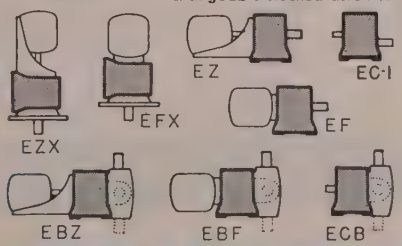
Precision Gearing. Heat treated alloy steel, precision cut and shaved helical gearing throughout . . . quiet-operating crown shaved pinions . . . taper bored gears for easy ratio changes.

All-steel Housings. Unbreakable, strong, rigid. Generous overhung load capacities provided by wide bearing spans, large shafts and bearings.



EC

The basic E design permits maximum use of standardized parts . . . closer control over materials, processing, inspection and assembly . . . resulting in faster delivery from interchangeable stocked assemblies.



FALK

. . . a good name in industry

THE FALK CORPORATION · 3001 W. Canal St. · Milwaukee 8, Wis.

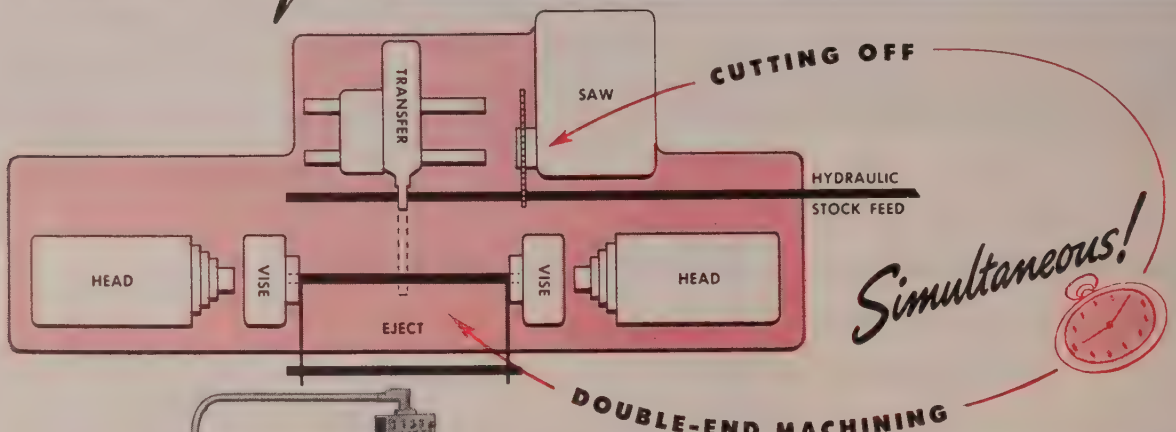
WRITE FOR BULLETIN 3104

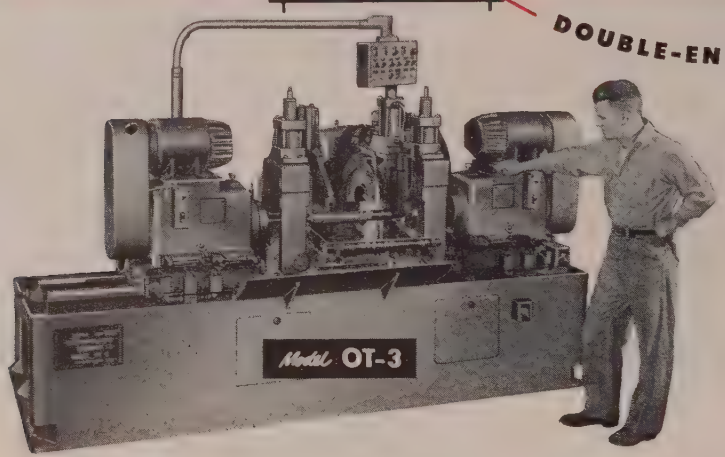
Variety..

CUT OFF while you **DOUBLE-END MACHINE**

on MOTCH & MERRYWEATHER

AUTOMATIC TRANSFER MACHINES!





BORE • FACE • CHAMFER • CENTER
DRILL • TURN • REAM • GROOVE
and other operations, singly or "unitized"

MP/SF
Most Production per Square Foot

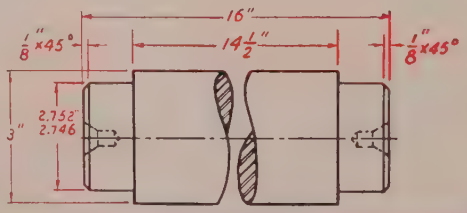
PRODUCE PROFIT Three or four machines in one. Cut off to accurate length and double-end machine simultaneously. Cut-off time is virtually "free". *Change-over quick from job to job!* Ideal for short or production runs. Cycle fully automatic. *Remember:* it's the cost per piece that counts.

Case Study No. 182

Operation: Cut off, box mill, turn and center drill both ends.

Material: SAE 1020.

Production: 110 pieces per hr.



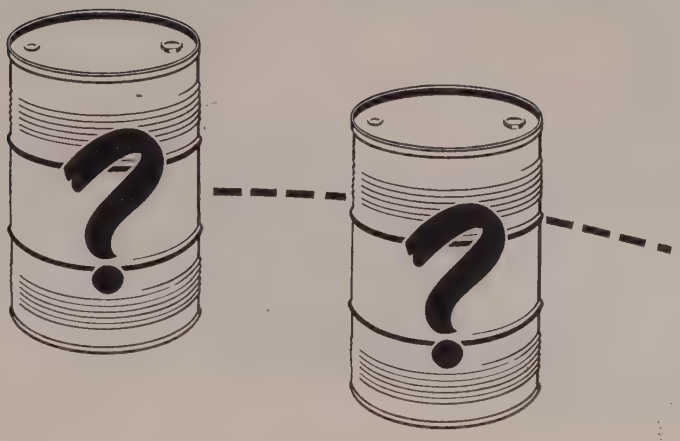
SPECIFICATIONS

ITEM	Model OT-3	Model OT-4½	Model 2T-6
Rated diameter stock	½" to 3"	¾" to 4½"	1" to 6"
*Standard work length	8" to 40"	8" to 40"	8" to 40"
Weight (approximate)	11,500 lbs.	15,000 lbs.	26,000 lbs.

*Work length can be increased by special arrangement.
NOTE: Supplied for ferrous or non-ferrous applications.

Manufactured by — THE MOTCH & MERRYWEATHER MACHINERY CO. —
CLEVELAND 13, OHIO
Builders of Circular Sawing Equipment, Production Milling, Turning and Special Machines

PRODUCTION-WITH-ACCURACY MACHINES AND EQUIPMENT



How do you choose a degreasing solvent?

Brand name and its significance should govern your choice. Today thousands of manufacturers specify "Triclene" D trichlorethylene because they know *that* brand name stands for highest quality. They know, too, that "Triclene" D is made by Du Pont—pioneer manufacturer of degreasing fluids with a long record of service in the metal cleaning field.

Over twenty years of experience stand behind each drum of "Triclene" D. This experience includes not only laboratory research, but a thorough knowledge of the needs of industry as well. "Triclene" D reflects this background. It is stable and pure. It is the best degreasing solvent Du Pont has ever made!

You'll find it pays to be brand-conscious in your choice of degreasing solvents. So be sure of the best... ask for "Triclene" D. And for expert advice on metal cleaning problems, just get in touch with our nearest district office. Du Pont service men are always ready to help you.

DISTRICT OFFICES: Boston • Charlotte • Chicago • Cincinnati
Cleveland • Detroit • El Monte (Calif.) • New York • Philadelphia

DU PONT
first in solvents for
VAPOR DEGREASING

DU PONT
REG. U. S. PAT. OFF.

Better Things for Better Living . . . *through Chemistry*

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S-817

E. I. du Pont de Nemours & Co. (Inc).
Electrochemicals Department, Wilmington 98, Delaware
Please send me the literature checked below:

- ☐ "How trichlorethylene is used in metal cleaning".
- ☐ "Triclene" D — an improved vapor degreasing solvent.
- ☐ "Metal degreasing — standard practices."
- ☐ Du Pont publication, "MODERN METAL FINISHING". (Please add my name to the mailing list).

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NIAGARA Presents

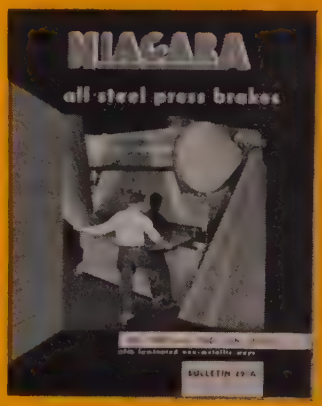
outstanding design features:

- Double End Twin Drive with double reduction gearing (for straight bends and smooth power application.)
- A rigid One-piece Frame with permanently welded crown for minimum deflection and permanent alignment.
- Laminated Non-Metallic Ways maintain accurate alignment and assure longest life of dependable service.
- Deep Twin Plate Steel Bed with open slug clearance for multiple punching work.
- Powerful Air Cooled Friction Clutch and Brake assures easy ideal "Press Brake Action".
- Air Electric Clutch Control may be operated by palm buttons on ram or foot switch with provisions for "Inching", "Single Stroking" and "Continuous Run".
- Reversible Flywheel can be pulled out of accidental stalls.
- Power Adjusted Ram with self-locking adjusting screws.
- Micrometer Dials accurately indicate position of ram so die settings can be quickly repeated.
- Accessibility at rear with plenty of clear working space for safety.
- Gages with full horizontal and vertical adjustment for front or rear of press.
- Angle Support Brackets and Bolster Plates quickly convert press for stamping operations without affecting bending ability.
- All gears operate in totally enclosed sealed baths of oil.

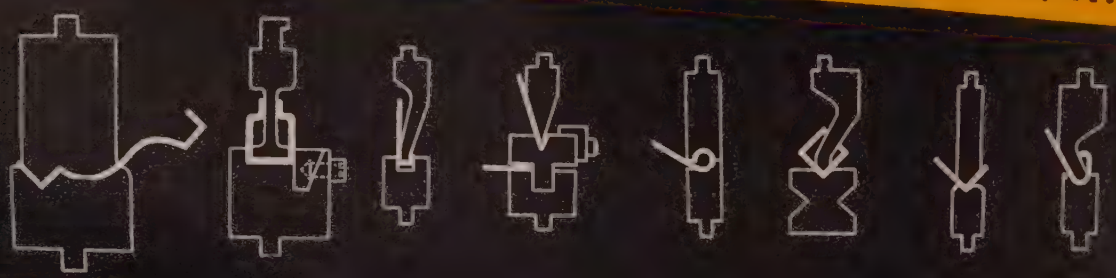
versatility of operations

BENDING	JOGGLING
FORMING	NOTCHING
DRAWING	PUNCHING
BEADING	PIERCING
CURLING	PERFORATING
CORRUGATING	SLITTING
BLANKING	TRIMMING
EMBOSSING	ETC.

WRITE FOR BULLETIN 89



NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y.



The Last Word in New All-Steel PRESS BRAKES

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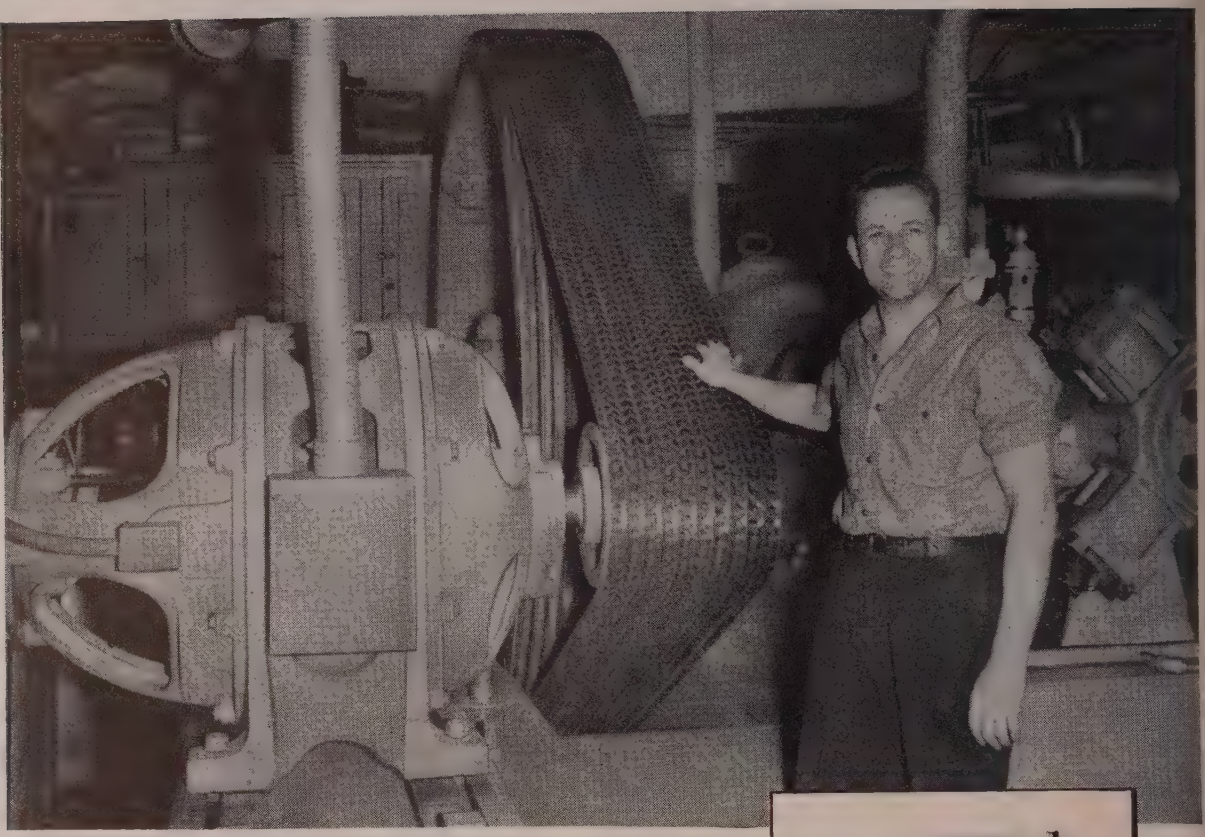
America's Most Complete Line of Presses, Shears, Machines and Tools for Sheet Metal Work

Dealers in principal U. S. cities and major foreign countries



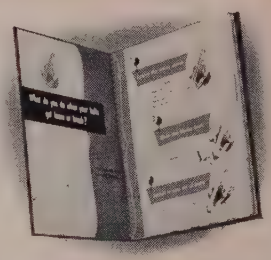
with Veelos on your machines...

v-belt replacement takes up to 90% less time

Actual in-plant records prove that Veelos v-belt can be installed *and operating* in up to 1/10th the time regularly needed to do the same job using endless v-belts.

Matched sets of Veelos are quickly made up in your own stockroom or at the machine by just coupling the correct lengths for the particular drive. Even outboard bearing drives are no problem. You *never* remove these outboard bearings, because Veelos is installed by simply coupling it around the shafts and running it onto the sheaves. And maintaining adequate stocks of Veelos is practically automatic. A quick check of the Veelos 100-foot reel will tell the inventory story.

For full vibrationless power delivery, for fast adjustability to keep sets matched, for ease of controlling inventory and for quick, simplified replacement — standardize on Veelos.



Have you seen this Veelos Facts Book?

Your Veelos v-belt distributor's salesman will be glad to give you a quick trip through this fact-packed, 36 page book. You'll find it well worth the few minutes it takes. Next time the salesman calls, ask him to show it to you.

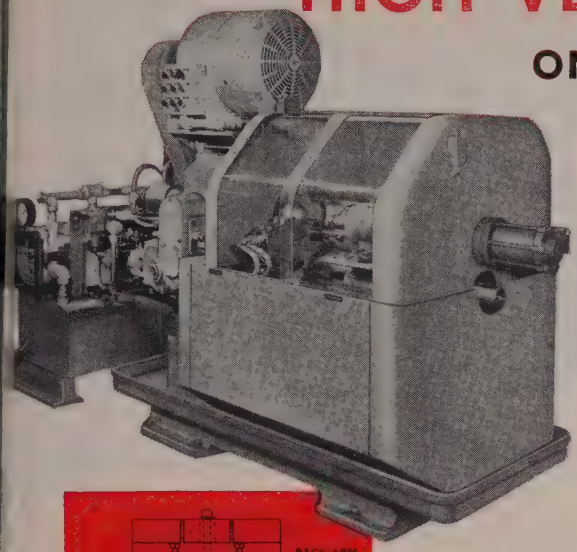
VEELOS
THE LINK
V-BELT

Write for a copy of the VEELOS DATA BOOK. It's fully illustrated and packed with useful engineering data. We'll be glad to send a copy along and you'll be glad to have it!

MANHEIM MANUFACTURING AND BELTING COMPANY
613 Manbel St., Manheim, Pa.

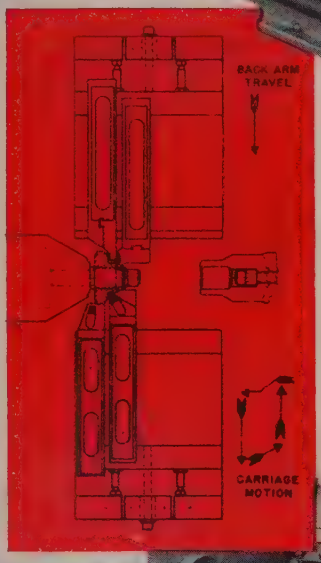
ADJUSTABLE TO ANY LENGTH • ADAPTABLE TO ANY DRIVE

AUTOMATICITY BACKS UP HIGH VELOCITY TURNING ON FAY AUTOMATICS



SIDE GEARS
18 Seconds Floor to Floor — 635 SFM

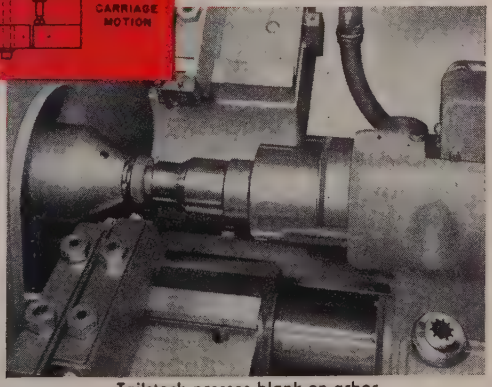
Two 8" Fays, with Automatic Sequential Control, machine all exterior surfaces of the blanks in two operations; one machine for each. The major diameter is 2-15/16" and floor to floor time is approximately 18 seconds in each operation.



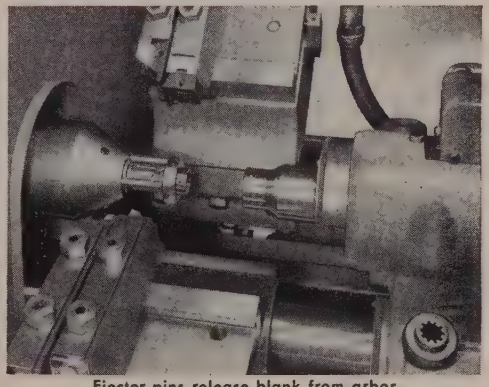
Automatic Cycle—The machines are equipped with automatically operated splash guards and automatically air-operated tailstock rams for pressing the blank onto a splined arbor equipped with automatically operated ejector pins.

The operator places the blank on the end of the arbor, and pushes the cycle start button. *Automatically, the guard closes, the tailstock ram presses the piece onto the arbor and then retracts. The carriage turns, the back arm faces, and at the end of the cuts, ejector pins push the piece onto the loading section of the arbor* from which it is removed manually.

RST OPERATION:
te intricate movements
the carriage, which turns
hub, back angle and
jor diameter. The back
m faces and forms.



Tailstock presses blank on arbor



Ejector pins release blank from arbor

Production management regularly relies upon the engineering services of Jones & Lamson for the latest information on methods, costs, tooling and performance. Why not consult us about YOUR *turning, threading and inspection problems.*

JONES & LAMSON

Machine Tool Craftsmen Since 1835

JONES & LAMSON MACHINE CO., 517 Clinton St., Dept. 710, Springfield, Vt., U.S.A.

FAY LATHE DIVISION

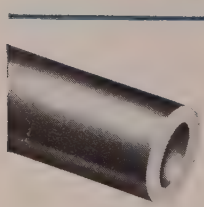
You're missing something if you don't remember CRUCIBLE HOLLOW TOOL STEEL

If you manufacture tool steel parts with cutout centers, and your aim is to reduce production time and costs, you can't afford to overlook Crucible Hollow Tool Steel. It comes in three famous grades: KETOS, AIRDI 150 and SANDERSON.

You don't have to drill and bore solid bars anymore. For these quality brands of tool steel are immediately available with machine-finished inside and outside diameters and faces — cut to your specific length requirements. And they come in a wide range of sizes.

By eliminating drilling and boring operations, Crucible Hollow Tool Steel will lower your production time per unit . . . increase your machine capacity . . . and reduce your scrap losses.

For full information and literature, call your nearest Crucible warehouse . . . or write for new brochure describing Crucible Hollow Tool Steel. Address Dept. S, Crucible Steel Company of America, Chrysler Building, New York, N. Y.



CRUCIBLE first name in special purpose steels

53 years of Fine steelmaking

HOLLOW TOOL STEEL

CRUCIBLE STEEL COMPANY OF AMERICA • TOOL STEEL SALES • SYRACUSE, N. Y.

WIRE BRAID helps put the *punch* in UNCLE SAM'S AIR ARM!

HERE'S the plant that powers new super jets—one of the most powerful jet engines ever released for production!

Look closely and note the broad application of tubular wire braid. It is typical of many types and sizes regularly produced by National-Standard for aircraft service—used not only for electrical shielding, but to reinforce thermocouple harness leads, as shown.

National-Standard with the largest range of wire braiding equipment in the country, is well prepared to supply or develop special braid that will meet your needs *exactly!*

NS NATIONAL-STANDARD Company NILES, MICHIGAN

DIVISIONS OF NATIONAL-STANDARD CO.

ATHENIA STEEL	*Clifton, N. J.*	Flat, High Carbon, Cold Rolled Spring Steel
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WORCESTER WIRE WORKS	*Worcester, Mass.*	Round and Shaped Steel Wire, Small Sizes

WHAT'S YOUR ALLOY STEEL PROBLEM?

SELECTION?
STRENGTH?
HARDNESS?
TOUGHNESS?
MACHINABILITY?
HEAT TREATMENT?
TOOL LIFE?
SURFACE FINISH?
LOW PRODUCTION?
HIGH UNIT COSTS?

Check your problem . . . or problems. Then call in Republic's 3-Dimension Metallurgical Service.

The man you meet will be the Republic Field Metallurgist. He comes to your plant, studies your product, examines your production methods. His report goes back to the Republic Mill and Laboratory Metallurgists.

These three specialists then work together to diagnose the trouble. From their wide knowledge of alloy steels, how they respond to forging, to heat treatment, to any work or process, they make recommendations. Not general ones, but those suitable for your plant and your particular problems, based on efficiency. And they stay within, or below, your cost limits. The results? Higher quality, greater output, economy.

Scores of Republic customers already have attained these benefits by taking advantage of this service. Ask your Republic salesman to call in his 3-Dimension Metallurgical Service. It's yours for the asking.

...combines the extensive experience and coordinated abilities of Republic's *Field*, *Mill* and *Laboratory* Metallurgists with the knowledge and skills of your own engineers. It has helped guide users of Alloy Steels in countless industries to the correct steel and its most efficient usage, IT CAN DO THE SAME FOR YOU.

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Alloy Steel Division • Massillon, Ohio
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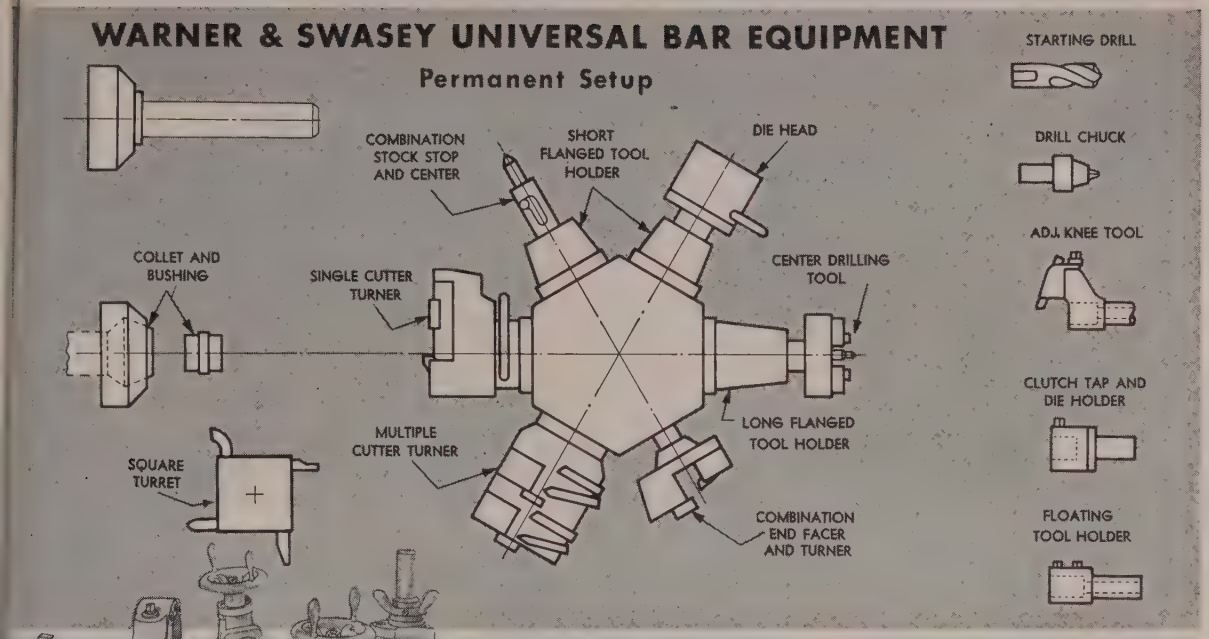
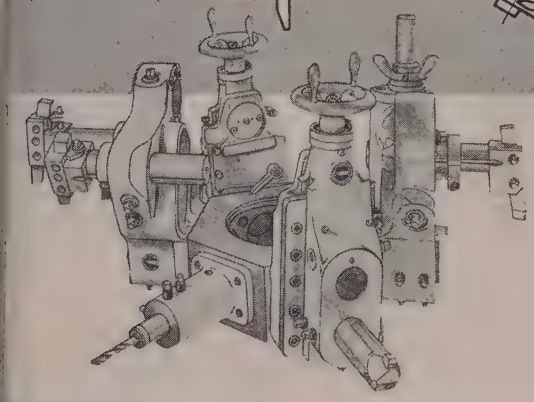
Republic REPUBLIC STEEL
ALLOY STEELS

Other Republic Products include Carbon and Stainless Steels—Sheets, Strip, Plates, Pipe, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing



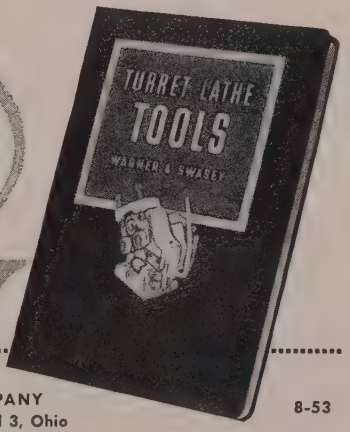


Use Warner & Swasey Standard Tools to

SPEED UP – SIMPLIFY YOUR PRODUCTION

YES, *you* can make Warner & Swasey standard turret lathe tools and Universal Tooling Setups *pay off*—with increased production, less setup, handling and cutting time, longer tool life. This free book clearly and simply explains how to select tools and improve setups, combined and multiple cuts, and many other modern tool applications. Fill in and mail the handy coupon for your free copy—*today!*

THIS FREE BOOK TELLS YOU HOW



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Please send me my free copy of "Turret Lathe Tools" today!

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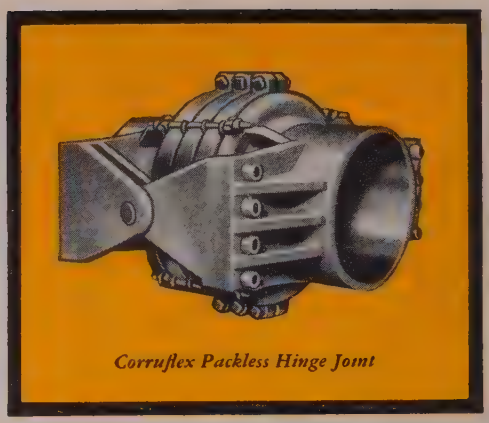
PRECISION MACHINERY SINCE 1880

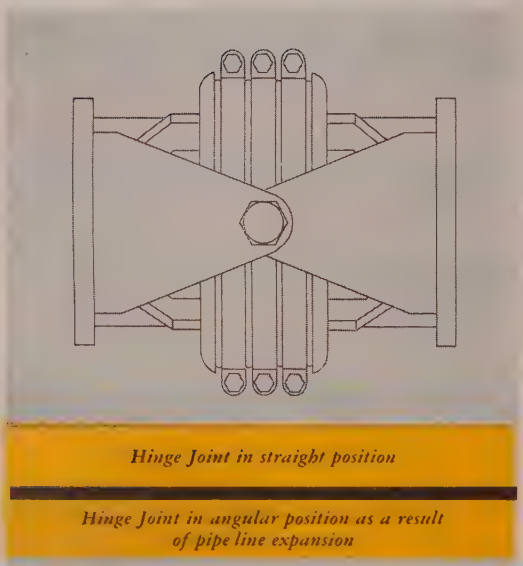
YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

PIPE EXPANSION...?



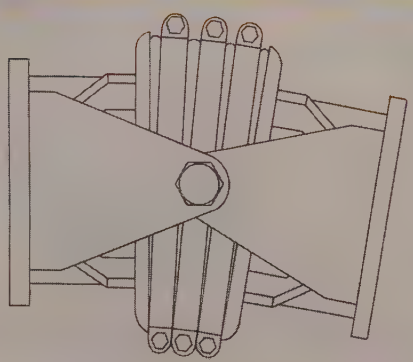
Corruflex Packless Hinge Joint

ADSCO HAS THE JOINT

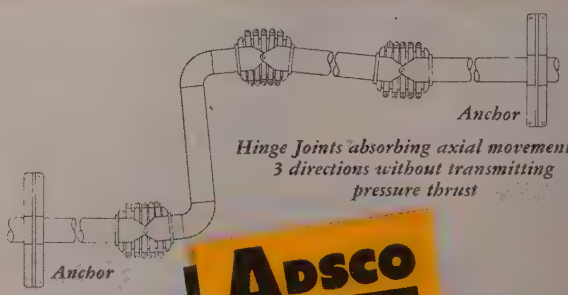


Hinge Joint in straight position

Hinge Joint in angular position as a result of pipe line expansion



● Because ADSCO makes the world's most complete line of slip and packless expansion joints, it has exactly the right joint to fill each need...The Corruflex Hinge Joint illustrates just one type of ADSCO's packless expansion joints. This joint permits movement in one plane by rotating about its own hinge-pin axis. In the application shown below, Hinge Joints are used to permit the pipe line to expand in three directions without transmitting line pressure thrust to anchors and without causing excessive stresses in the piping. This is a distinct advantage in elevated pipe lines or in cases where there is no structure strong enough to provide for end-anchor thrust... But the Corruflex Packless Hinge Joint is only one joint in ADSCO's complete line of slip and packless expansion joints. Whatever the problem, call an ADSCO representative first... or write for Bulletin 35-51A.



Hinge Joints absorbing axial movement in 3 directions without transmitting pressure thrust

ADSCO ENGINEERED PRODUCTS

EXPANSION JOINTS
HEAT EXCHANGERS
STEAM TRAPS

STRAINERS
SEPARATORS
METERS

AMERICAN DISTRICT STEAM COMPANY, INC.

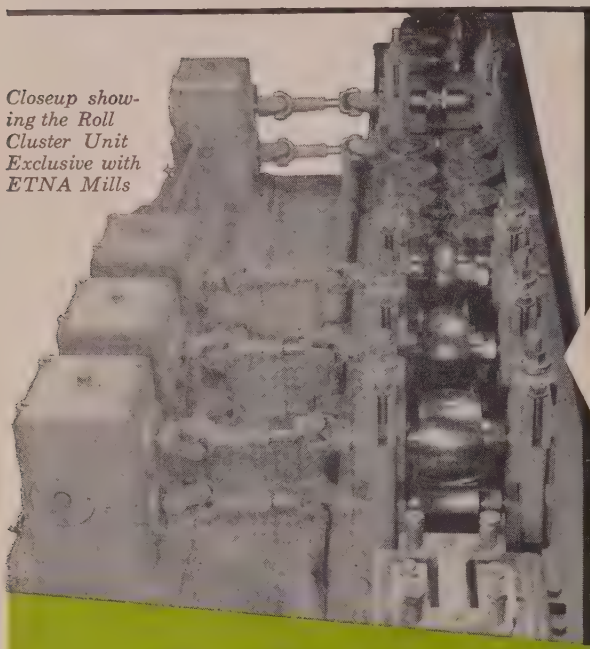
NORTH TONAWANDA, NEW YORK

Since 1877

Here's *usable beauty* for exacting service . . . wear-resistant, hard, bright and strong throughout! SUPERIOR STAINLESS forms smoothly and easily because it is uniform in every physical quality: facts proved by the mile in mouldings manufacture every day. ● May we serve *your* stainless steel strip applications?

Superior Steel
CORPORATION
CARNEGIE, PENNSYLVANIA

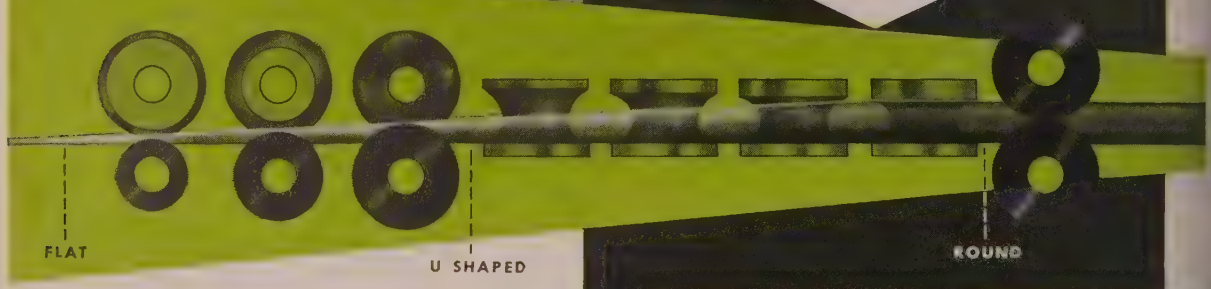
LEADING THE INDUSTRY IN DESIGN...



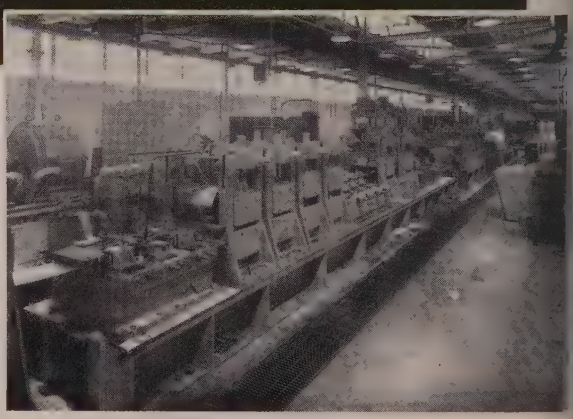
Closeup showing the Roll Cluster Unit Exclusive with ETNA Mills

NO MARKING . . . NO SCRATCHING
NO UPSET EDGES . . .

THE Etna METHOD
FOR SMOOTH, WELL FORMED STEEL TUBING



Exclusive with Etna is the cluster unit. This unit progressively rolls the tube into shape without excessive stretching of the edges, thereby eliminating the "buckling" experienced with ordinary tube mills. Etna machines are not forming mills, they are designed for one purpose only . . . to make clear, well formed carbon and stainless steel tubing with no marking, no scratching, no upset edges. Write for complete details.

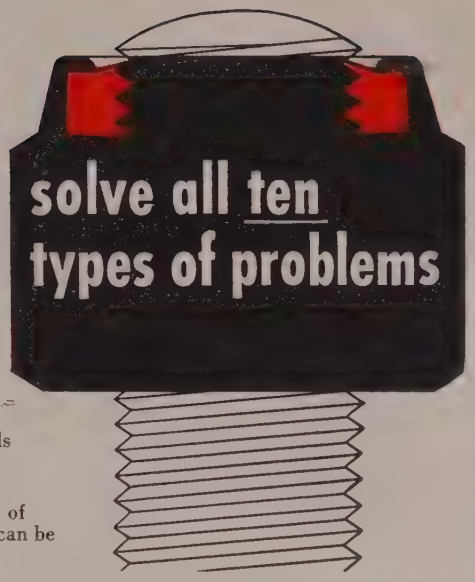


The ETNA 4KU Mill

Abbey ETNA Company

3402 MAPLEWOOD AVE., TOLEDO 10, OHIO

elastic stop nuts solve all ten types of problems

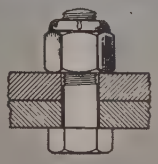


Here are ten typical fastening problems. One device, the ELASTIC STOP nut, solves them all—without additional parts or operations. Deliberately undersized in relation to bolt diameter, the red elastic collar grips the bolt with a perfect fit, exerting a continuing self-locking pressure against the threads, and holding the nut securely in place at any point on the bolt. It also provides a tight seal against the bolt threads, which prevents seepage and wear-producing axial play. And because the bolt threads are protected against moisture from without, the nuts are not "frozen" to the bolt by corrosion.

ELASTIC STOP nuts stay tight, right where you put them, in spite of vibration and stress reversals. Yet they are not jammed in place, and can be removed with a wrench and reused many times.

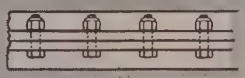
For further information on ESNA self-locking fasteners, mail the coupon below.

TIGHTENED AGAINST THE WORK



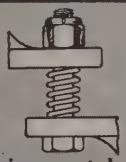
Wherever a vibration or impact proof bolted connection is desired.

On all electrical terminals subjected to vibration in transit or operation.



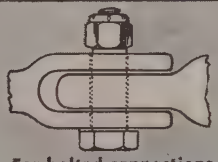
For uniform and precise prestressing of multiple bolt assemblies . . . adjusted by predetermined wrench torques.

LOCATED ANYWHERE ON THE BOLT

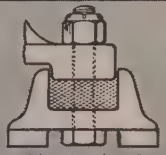


Spring-mounted connections or dynamic balancing, where nut must stay put yet be easily adjusted.

On make-and-break adjustment studs where accurate contact gaps are required.

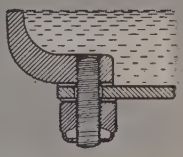


For bolted connections requiring predetermined play.

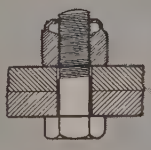


For rubber-insulated and cushion mountings where the nut must not work up or down.

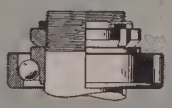
FOR MANY SPECIAL APPLICATIONS



To seal bolt threads where elimination of leakage past stud threads is necessary.



To seal bolt threads where it is necessary to protect them from corroding elements.



To obtain delicate adjustments for applications such as bearing locknuts where precise adjustment is essential.

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ESNA TRADE MARK

ROLLPIN TRADE MARK

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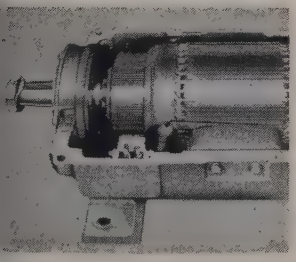
eater speed, precision and stamina are typical vances made in modern steel plant operations ough automatic, integrated control and skillfully gineered motors.

There's the record set in reversing the blooming ll at the Jones & Laughlin Steel Corporation. Here an example of the performance of Westinghouse in Drive Equipment backed up by the performance Westinghouse Motors and Controls applied to the xiliary drives.

The low-inertia armature of the Westinghouse Type C Mill Motor for auxiliary drives allows starting, pping and reversing under heavy loads in minimum ne. As a result, low current peaks and energy conmption are assured. Better commutation, heavier le steel shaft and higher maximum safe speeds are t a few of the many other advantages from applying estinghouse Mill Motors.

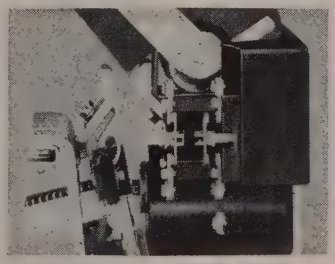
Controls for auxiliary drives have been designed to give the maximum protection with high-speed operation. The best in control devices is used. For example, with Westinghouse Type M Contactors at work in your mill, you're assured of millions of trouble-free make-breaks even on the toughest jobs. Knife-edge bearings on Type M Contactors eliminate friction . . . reduce wear. A strong kickout spring delivers faster action for rapid, cyclic operations. Special arc chambers snuff out harmful arcs, thereby increasing contact life. Interlocks, mounted directly on the contactor frame, enable you to get any precise sequencing required.

Investigate Westinghouse Mill Motors and Controls. Ask your local Westinghouse salesman for booklet B-5650, *Westinghouse Mill Motors and Control Equipment,* or write to: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-21786



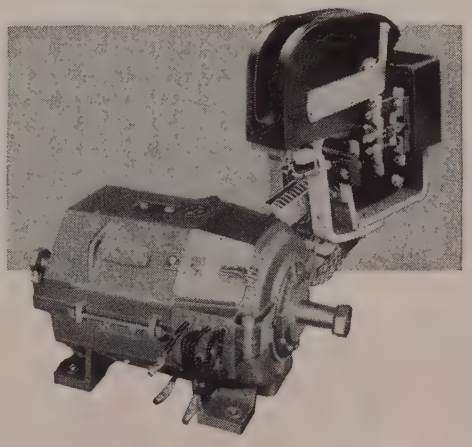
eavy-duty Armature

ore is accurately bored and ressed on axle steel shaft elimiting quill. Coils are held in ots with wedges, rather than onventional bands, permitting fer operation.



Unit-mounted Interlocks

Electrical interlocks are mounted directly on the contactor frame and maintain correct alignment with the moving armature. No troublesome operating linkages are required.



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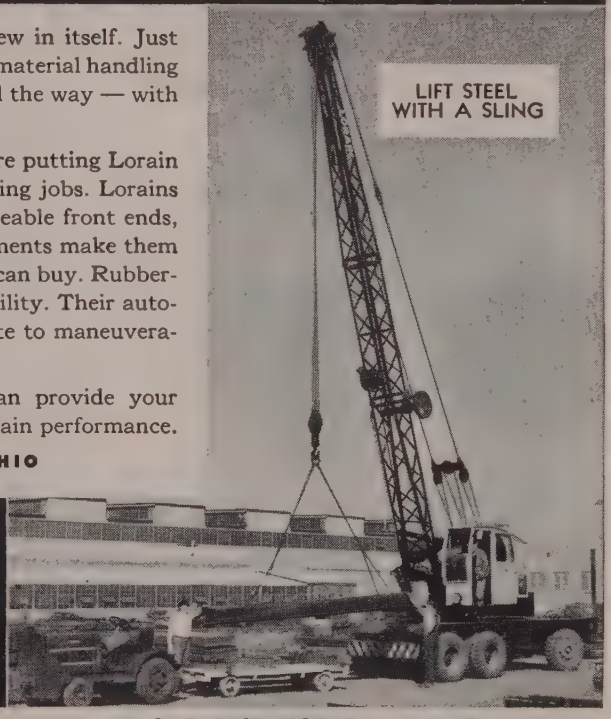

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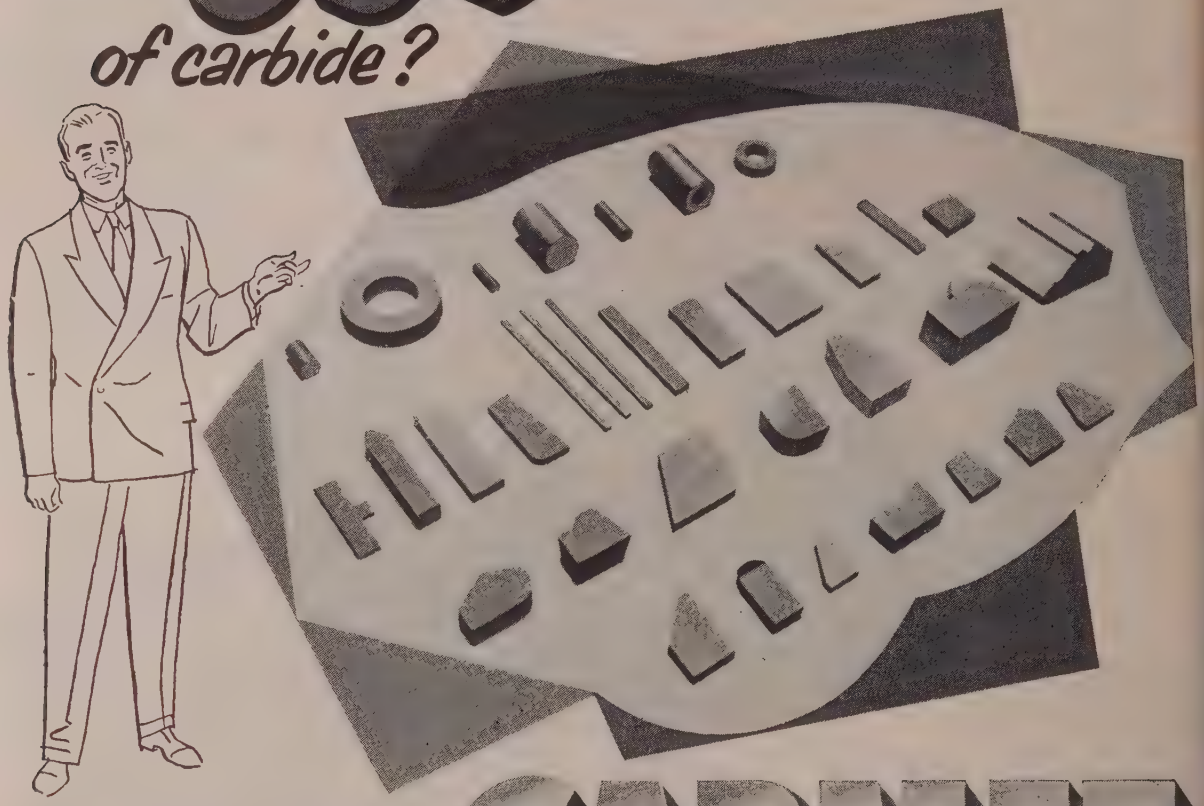

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When the exact shape and size of Tip you need is not to be found in carbide producers' catalogs, what should you do?—(1) order the Tips that seem to be adaptable, and then go to the expense of grinding them down to suit—or (2) ask CARMET to build you a die that presses the Tips to *your* designs? The answer is obvious! Save costly grinding.

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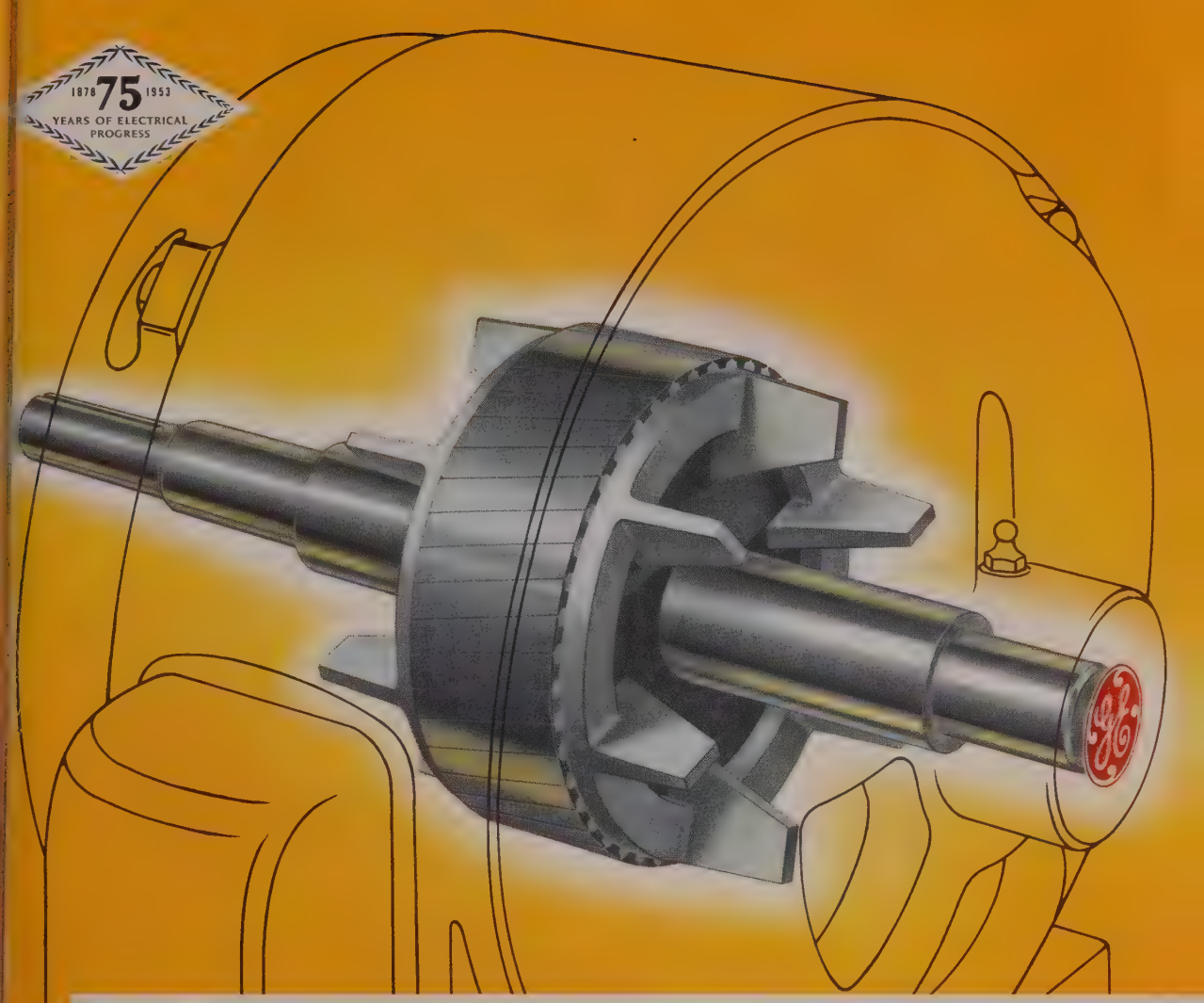

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Long rotor life is one more reason why G-E Tri-Clad motors last longer — give you more reliable service and greater operating economy.

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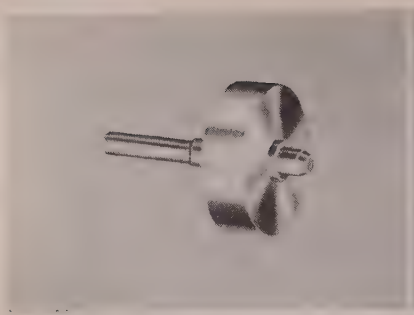
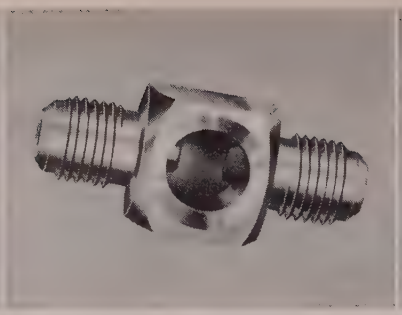

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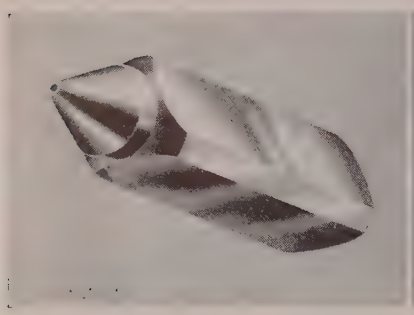
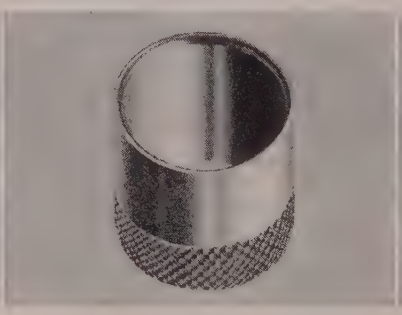
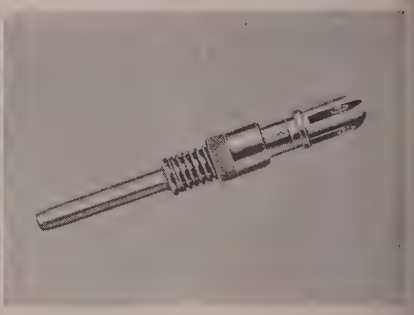
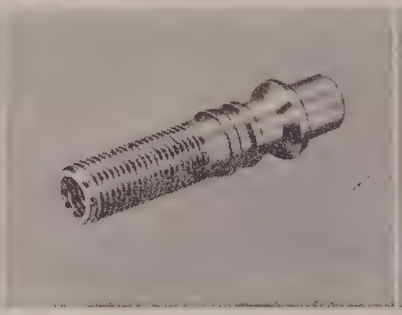
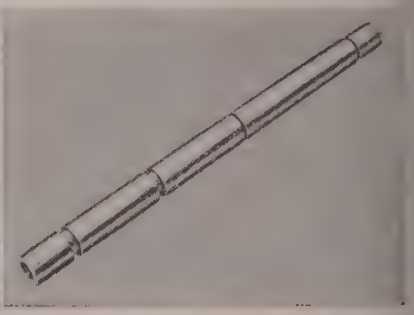




Reported on Each of These Jobs

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Another help Carpenter can give you is useful information about machining Stainless. For example, the Carpenter "NOTEBOOK on Machining Stainless Steels" covers turning, drilling, reaming, lubrication, etc. If you would like a copy, just send us a note on your company letterhead, indicating your title.

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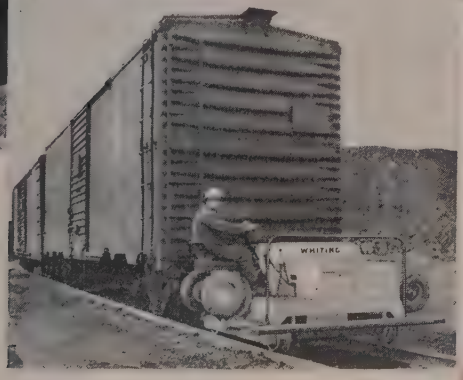

Leave it to a youngster to come to the point fast! The Trackmobile moves on the track or on the road . . . hence the rubber-tired wheels! It changes from track to road operation, or vice-versa, in 30 seconds . . . goes anywhere in your plant area and can't get "bottled up." It's *always* ready to spot, switch or haul cars. That's why Trackmobile users in every industry are getting lower car handling costs, better production schedules. Write to Whiting *now* for complete information!

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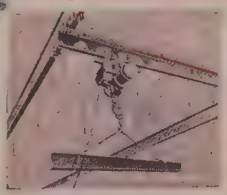
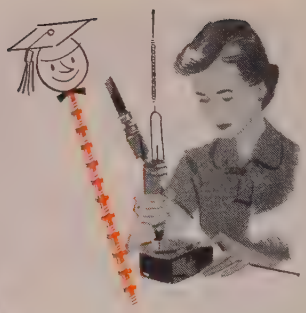


Trambeam Overhead Handling Systems

Electric Chain Hoists

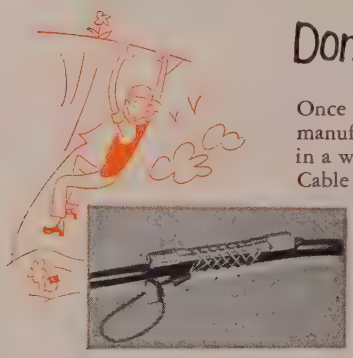
Overhead Cranes

ANACONDA METALS AT WORK



Meet the educated screw

This is a whole family of screws, known as Screwsticks, and joined head-to-toe. Insert a Screwstick in the driver, aim it at the hole—and from there on the Screwstick tightens itself to the predetermined torque, shears itself and gets its head burnished by the following screw which automatically advances itself. It's so fast that American Screw Co. of Willimantic, Conn., which uses ANACONDA Hexagon Brass Rod, refers to it as "jet propulsion".

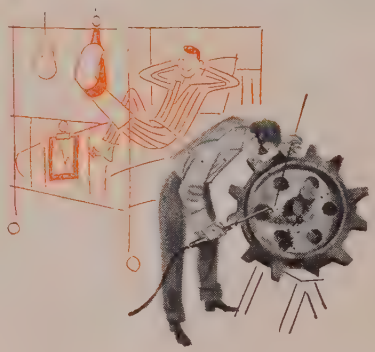


Don't lose your grip

Once a novelty trick developed by the Chinese, the manufacture of these grips is now an industry. Made in a wide variety of styles and sizes by Economy Cable Grip Co. of Norwalk, Conn., they are used to anchor suspended electric power cables and to seize the end for pulling through ducts. The harder you pull, the tighter they grip. Needless to say, the ANACONDA Bronze Cable, Everdur* Rod and Copper Tube used in their manufacture never weaken from rust.

A fast delivery...with mustard

When baseball fans want their hot dogs, they want them fast—so Stainless Alloy Fabricators of Detroit built this "Double-Header" baseball park hot dog server. Its big capacity for hot dogs—and fast service—is its double bun warmer, one at each end, heated by copper water boilers. If the water runs dry, it's no strike-out. Boilers are made of phosphorized copper sheet with joints formed by fusing the edges with a Heliarc torch. No solder used, no seams to burn open.



How to treat a fracture

A fracture often means long uselessness—but that needn't be true of machinery. Usually braze welding can make it good as new and at a fraction of the time and cost of replacing it. This fractured cast iron conveyor drive sprocket, for example, would have taken two months to replace. The Universal Welding Co., Rochester, N. Y., repaired it in only 7 hours by braze-welding with ANACONDA-997 (Low Fuming) Bronze Welding Rod. Moral: don't count the patient out before consulting your welder.

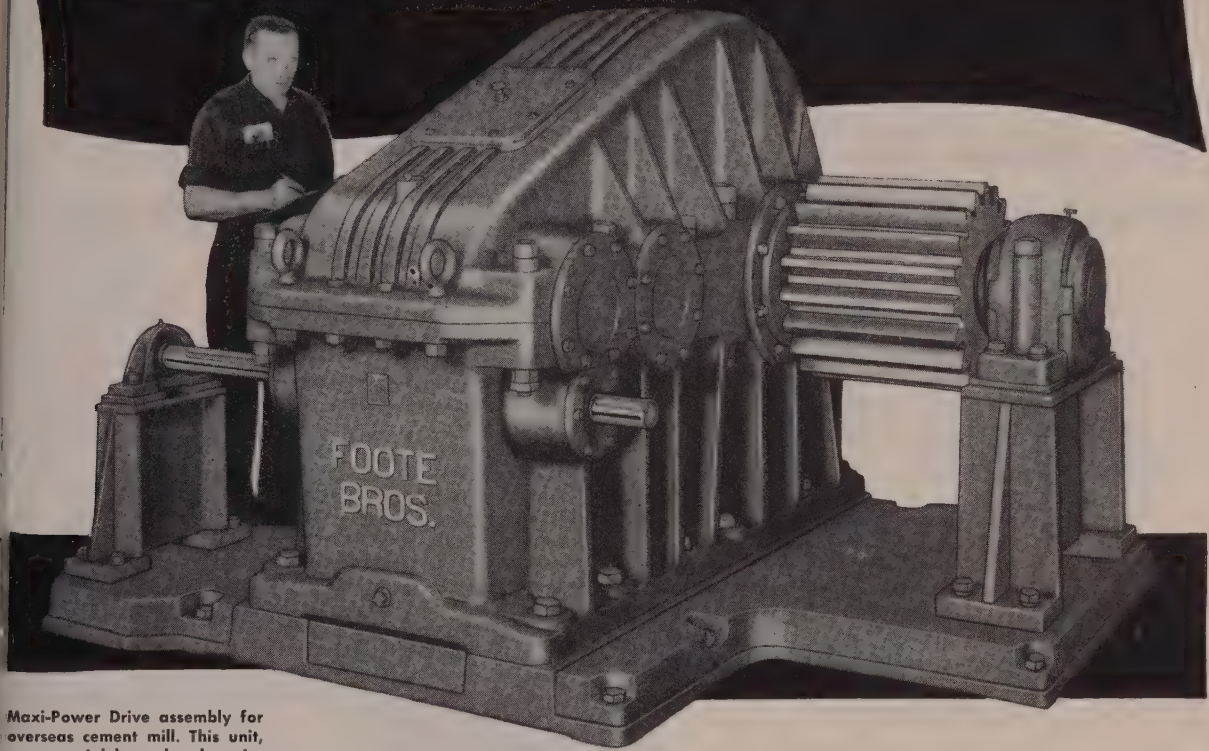
There's more to this than meets the eye

In our Technical Department you will find a range of experience that covers the entire field of copper and copper-alloy applicatio in the metalworking industries. If you have a problem of metal selection, we are at your service. *The American Brass Company, Wat bury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.*

*Reg. U. S. Pat. Off.

ANACONDA® the name to remember in COPPER-BRASS-BRONZ

READY FOR RUGGED DUTY



Maxi-Power Drive assembly for overseas cement mill. This unit, on a special base, has long input and output shafts supported by outboard bearings. The large spur pinion will drive a 20-foot, 18-inch face spur gear.

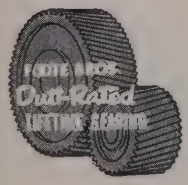
FOOTE BROS. MAXI-POWER DRIVES

With maximum load-carrying capacity for day-after-day service, Foote Bros. Maxi-Power Drives offer a ready solution for toughest speed reduction applications.

Sturdy, compact Maxi-Power Drives have precision-generated helical gearing — uniform load distribution across the entire tooth surface. Maximum performance is assured for all applications where rugged service is required.

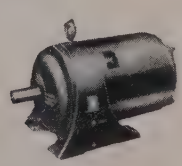
These parallel shaft speed reducers are available in single, double or triple reductions. Ratios range up to 360 to 1 — capacities up to 1,550 horsepower — ideal for slow-speed requirements.

Foote Bros. also offers a complete line of foot or flange mounted drives for both horizontal and vertical applications, and Foote Bros.-Louis Allis Gearmotors, horizontal and vertical.



This Trademark Stands for the Finest in Industrial Gearing

Line-O-Power Drives



Foote Bros.-Louis Allis Gearmotors

Hygrade Drives

FOOTE BROS.

Better Power Transmission Through Better Gears

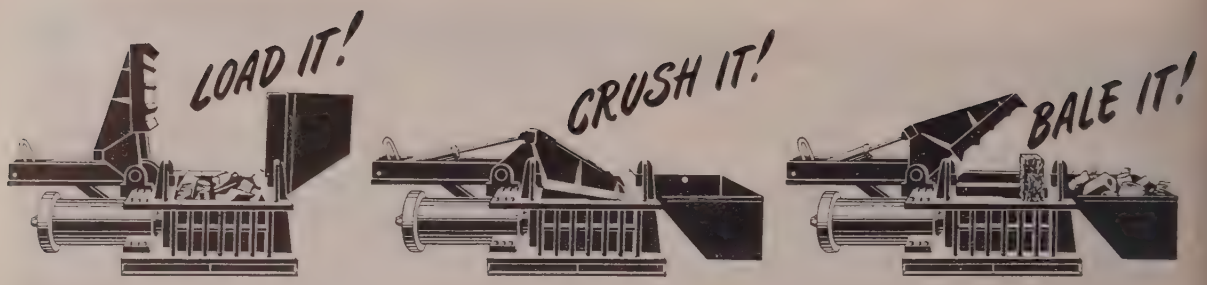
FOOTE BROS. GEAR AND MACHINE CORPORATION
Dept. X, 4545 South Western Boulevard, Chicago 9, Illinois
Please send Bulletin MPB containing full information on Foote Bros. Maxi-Power Drives.

Name.....

Company.....

Address.....

City.....Zone.....State.....



We Build the Dempster-Balester to Load It, Crush It, Bale It— Bale After Bale After Bale

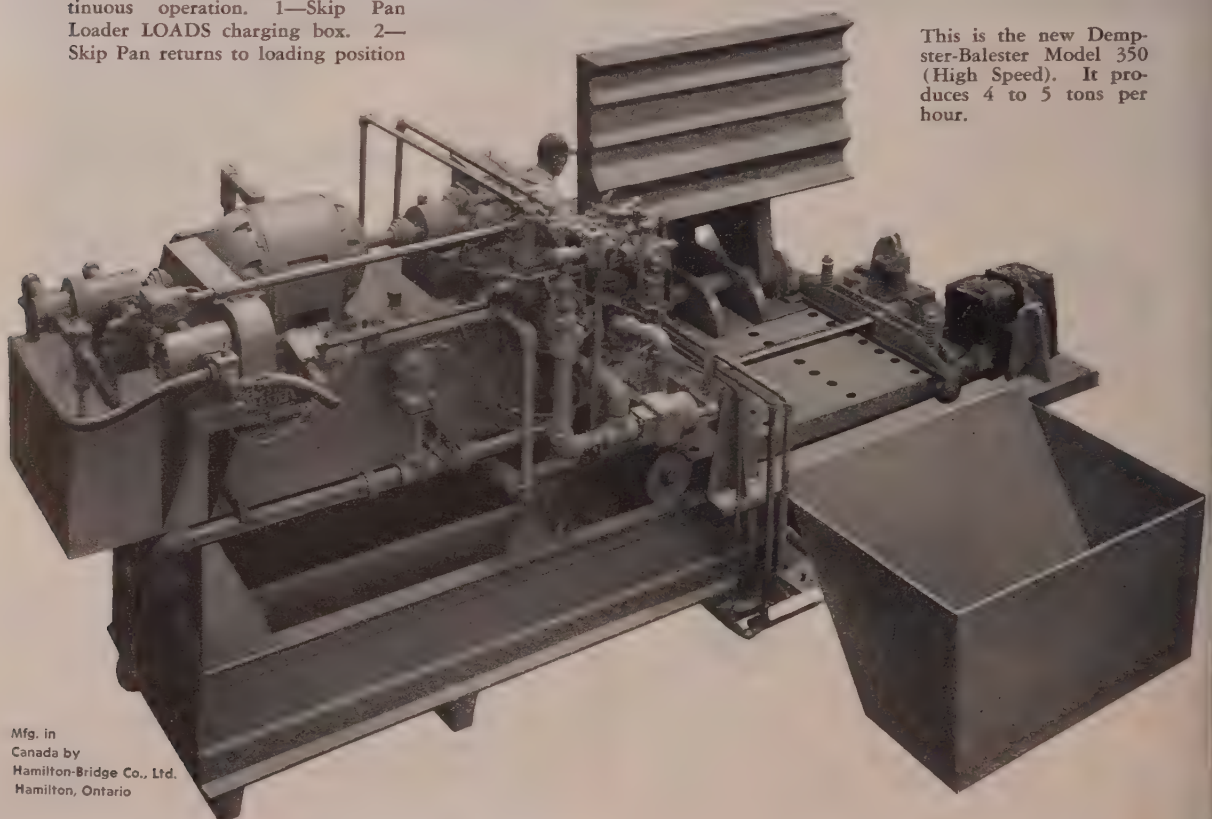
You not only get the nearest thing available to automatic baling when you buy a Dempster-Balester, but you get a press built to take the punishment of scrap metal baling consistently day-in and day-out . . . bale-after-bale-after-bale! The first Dempster-Balester was built in 1940 and it is still in operation. Today, hundreds of Dempster-Balesters are making money for men like yourself in over 200 cities in almost every state of the union, plus 15 foreign countries.

The Dempster-Balester's LOAD IT, CRUSH IT, BALE IT cycle (illustrated above) is a simple 1-2-3 continuous operation. 1—Skip Pan Loader LOADS charging box. 2—Skip Pan returns to loading position and Auxiliary Compression Door CRUSHES scrap with a 45-ton force. 3—As Compression Door returns to up-right position, charging box door closes . . . scrap is BALED and ejected. As each cycle ends another begins.

Without question, Dempster-Balesters are the fastest, most efficient presses baling scrap metal today! And you have six to choose from—three standard and three high speed models that turn out high density bales in capacities to meet any requirement from 1 to 9 tons per hour.

And don't overlook this important point. Before buying a baling press, it's important to know what kind of service you can expect. Certainly, no piece of heavy machinery can operate consistently without maintenance. Breakdowns cost money and when a part is needed for one of our presses, it is usually shipped the day your order is received. An ample stock of repair parts is constantly maintained to take care of you promptly! Write to us today for complete information.

A product of Dempster Brothers, Inc.

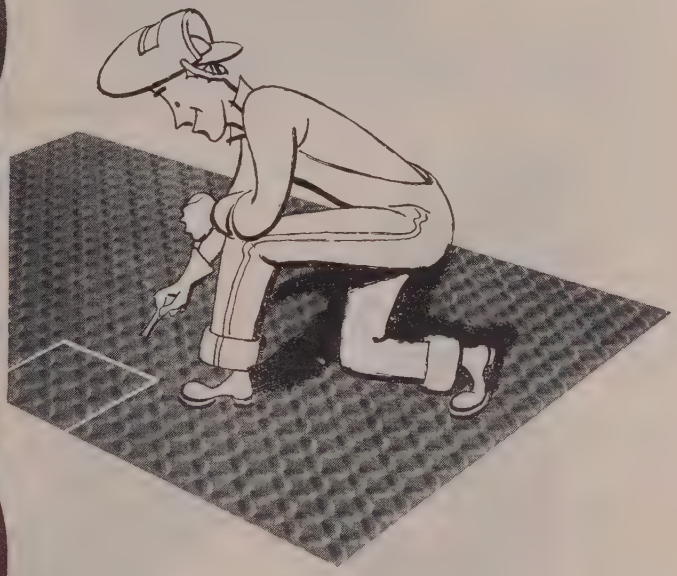


This is the new Dempster-Balester Model 350 (High Speed). It produces 4 to 5 tons per hour.

Mfg. in Canada by Hamilton-Bridge Co., Ltd. Hamilton, Ontario

DEMPSTER BROTHERS, 883 Shea Building, Knoxville 17, Tennessee

You can cut and join this floor plate to any shape you need,
And Multigrip will fabricate with utmost ease and speed;
For Multigrip is so designed to make the sections match
Placed end to end, or side to side, or in a side-end patch . . .
The pattern that is formed will be the same from all directions,
And Multigrip needs fewer joints for it comes in bigger sections!



EASY FABRICATION. The symmetrical pattern of U·S·S Multigrip Floor Plate allows neat, continuous installations and keeps cutting waste to a minimum. Available in long, wide sections, it reduces installation costs where large areas are to be covered.

Slip-proof Multigrip provides firm, sure footing for workers and positive traction for vehicles. The scientifically-designed risers feel comfortable underfoot . . . tend to lessen fatigue. The lozenge-shaped, evenly-spaced risers are at right angles to one another . . . form no pockets to catch dirt, grease and water, no gutters to trap vehicle wheels.

For entire factory floors or steps and platforms of machinery, for safety's sake use Multigrip, the non-skid, permanent floor plate.

UNITED STATES STEEL CORPORATION, PITTSBURGH
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, CHICAGO
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S multigrip FLOOR PLATE

USS

Sold by leading distributors from coast to coast

3-65

UNITED STATES STEEL

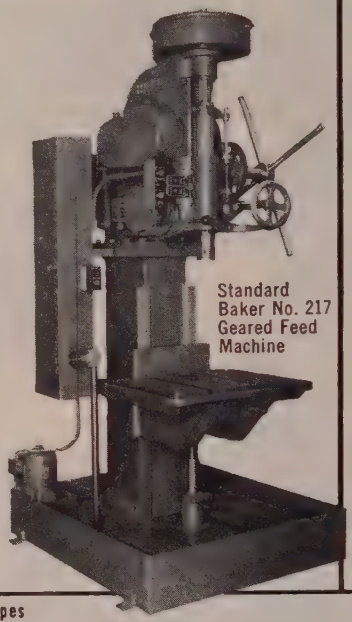
BAKER

Standard HEAVY-DUTY DRILLS

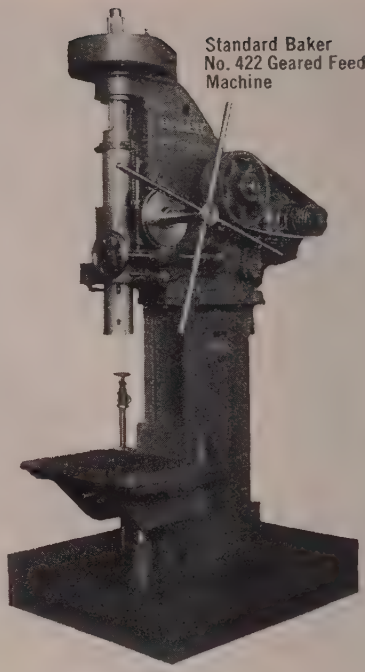
2 to 4 WEEKS DELIVERY . . .

ON THESE MACHINES—Subject to prior sale

Standard Baker No. 150 Geared Feed Machine



Standard Baker No. 217 Geared Feed Machine



Standard Baker No. 422 Geared Feed Machine

Standard Baker No. 321 Geared Feed Machine

MAJOR SPECIFICATIONS—Single Purpose Types					
	150	150 Q.C.†	217	321	422
1. Capacity—Max. Dia. Drill in S.A.E. 1035 Steel	1½	1½"	2	3	4½
2. Max. H. P. Motor used	7½	7½"	10	15	20
3. Distance center of Spindle to Frame [Gap]*	11"	11"	12¼"	12¼"	12¼"
4. Maximum Spindle Travel	11"	11"	12"	16"	16"
5. Spindle—Outside Dia. splined driving end	1¾"	1¾"	2"	2-13/16"	3¼"
6. Dia. of Spindle Sleeve	2¾"	2.750"	3¼"	4¼"	5¼"
7. Dia. of Spindle Nose	2.975	2.975"	.3225	4.225"	5.225
8. Morse Taper in Spindle as standard	No. 4	No. 4	No. 5	No. 5	No. 6
9. Standard Speed Range in R.P.M.	151-632	48-1120	76-614	27-220	20-165

* Can be increased 3" by use of offset Spacer Block. † Quick Change, 12 Speeds

Baker single purpose type drills are heavy duty . . . provide a wide range of speeds and feeds for Single and Multiple Spindle Drilling . . . Reaming . . . Boring . . . Facing . . . Chamfering . . . Undercutting and Tapping Operations. Write for full details.

Baker Brothers, Inc.
Toledo, Ohio

Gentlemen:

Please send more information on Baker Standard Drills to:

NAME.....

COMPANY.....

STREET.....

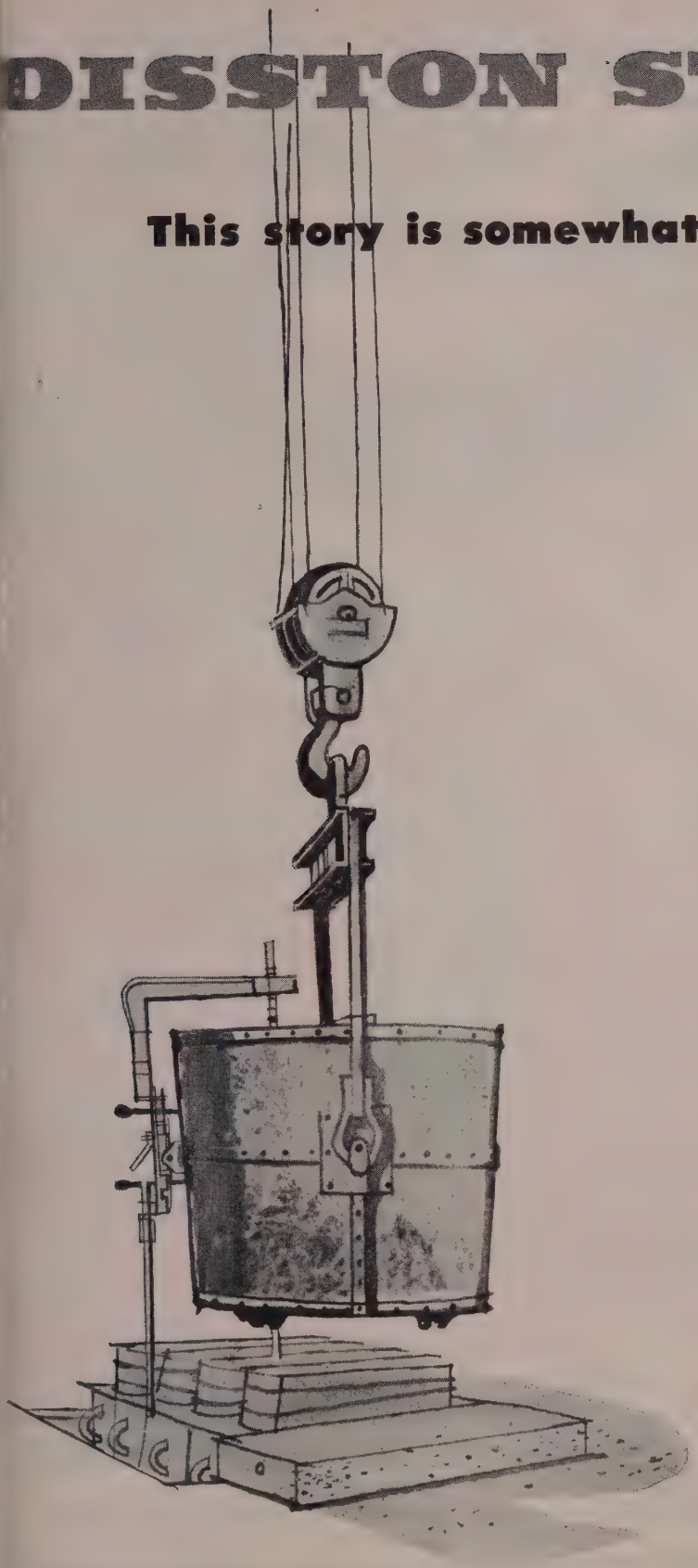
CITY.....STATE.....

BAKER BROTHERS, INC. Toledo, Ohio

DRILLING...TAPPING...KEYSEATING and CONTOUR GRINDING MACHINES

DISSTON STEELS

This story is somewhat different



. . . for Disston is both a steelmaker *and* a toolmaker. In its extensive mills the company produces many kinds of high-grade special steels — for use by other leading toolmakers, as well as for its own famous saws and tools. Throughout industry, the phrase "Made from Disston Steel" is recognized as a guide to the very highest quality.

Hot rolled, carbon, and alloy steels—including water-, oil-, and air-hardening die steels, and high speed steels. Special shapes and composite steels.

HENRY DISSTON & SONS, INC.
826 Tacony, Philadelphia 35, Pa., U.S.A.

2 names for quality assurance

POLLOCK
BUILDER FOR THE IRON AND STEEL INDUSTRY
Since 1863

Bailey ENGINEERS
WILLIAM M. BAILEY COMPANY

POLLOCK FABRICATES VALVES FOR WILLIAM M. BAILEY COMPANY

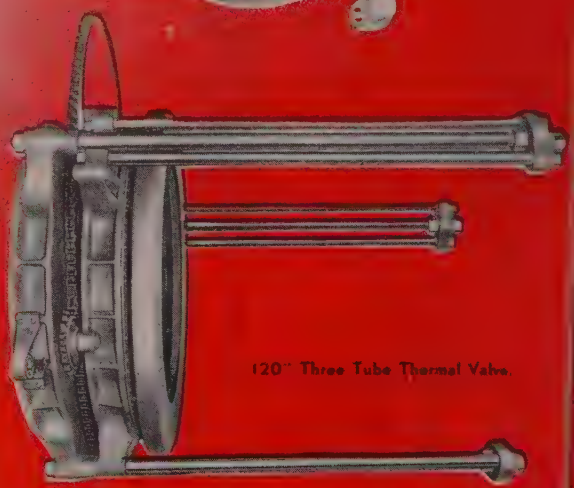
It's double assurance when an accepted leader in its particular field teams its engineering "know how" with the production "know how" of another leader in the field of precision construction.

For firms whose successful operations are assured by careful equipment selection, the Wm. M. Bailey Company of Pittsburgh is the preferred supplier of mechanical and thermal expansion valves.

Buyers of Bailey valves have an additional assurance when The William B. Pollock Company of Youngstown is entrusted with the precision production job.

Since 1863 Pollock has been the important **NAME** in the iron and steel industry for engineering, construction and erection of blast furnace and steel plant equipment throughout the entire world.

72" x 60" Hand Operated Valve and Goggle Plate



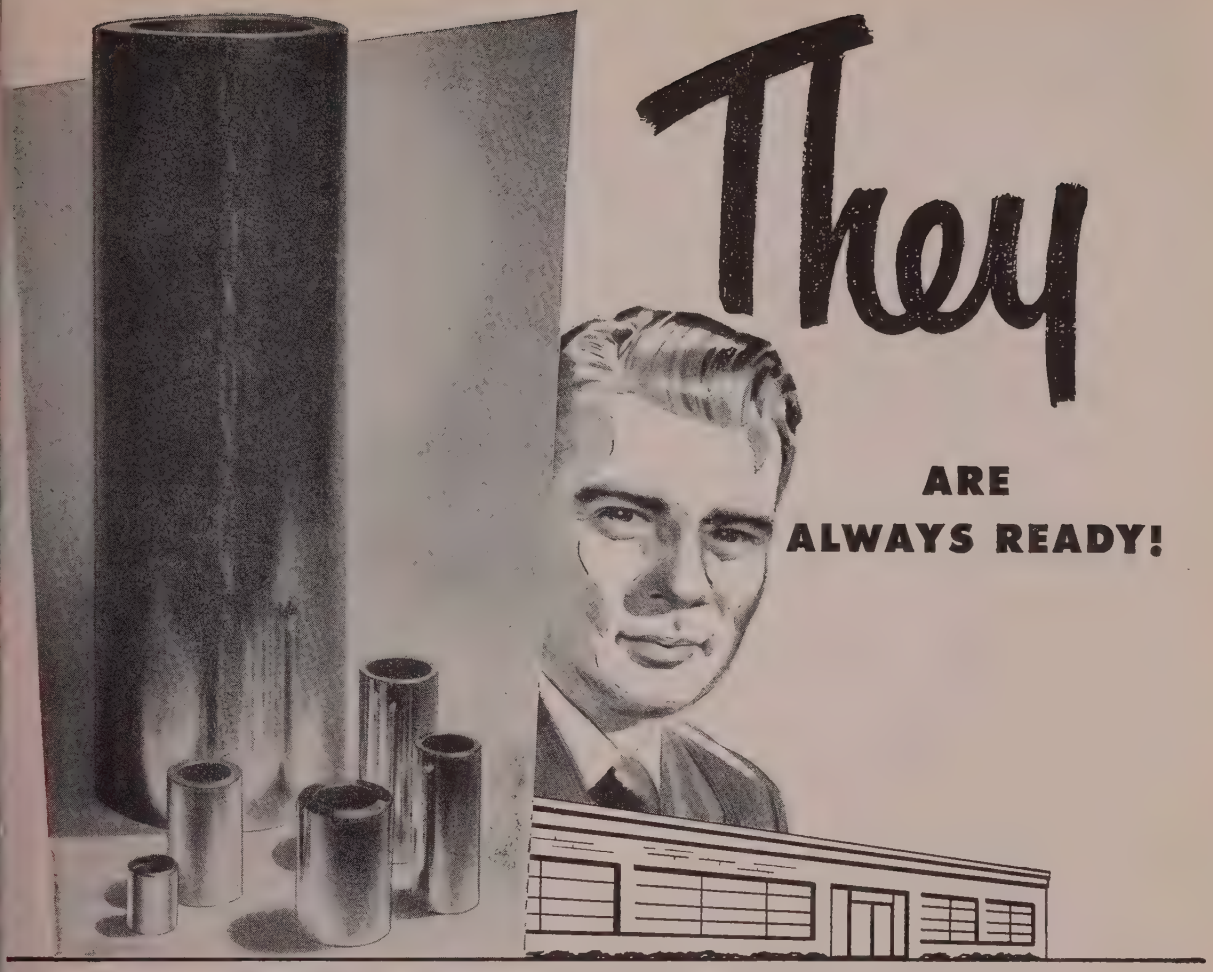
120" Three Tube Thermal Valve.

The William B. Pollock Company fabricates to Bailey specification mechanical valves in the following sizes—54" x 42", 60" x 48", 66" x 54" and 72" x 60". These sizes are used mainly in the steel industry in blast furnace gas mains; gas washers, precipitators, boiler plants and coke plants, as well as chemical and metallurgical plants.

In addition, Pollock makes most Bailey Thermal Valves, from 60" x 48" to 120" x 104". These thermal valves are used mainly in the steel industry in the blast furnace plants—in gas mains, gas washers, etc.

POLLOCK
Since 1863
BLAST FURNACES • HOT METAL CARS AND LADLES
CINDER AND SLAG CARS • INGOT MOLD CARS
CHARGING BOX CARS • WELDED OPEN HEARTH LADLES

THE WILLIAM B. POLLOCK COMPANY
YOUNGSTOWN, OHIO
STEEL PLATE CONSTRUCTION • ENGINEERS
FABRICATORS • ERECTORS



They ARE ALWAYS READY!

Bunting Standard Stock Bearings

Completely machined and finished—ready for assembly—Bunting Standard Stock Bearings can be immediately installed in most machine tools and industrial machinery. Unusual requirements are quickly and economically met by slight additional finishing. Your local Bunting distributor stands ready to serve you at all times from his large stocks.

The Bunting Distributor

Your Bunting Distributor is an industrial distributor or a specialist in certain industrial items. You will find him listed in the classified section of your telephone book—most likely under the heading Bars, bronze or Bearings, bronze. If he is the leading distributor, he almost certainly is the Bunting Distributor. He carries in stock, for your money saving convenience, completely machined and finished Bunting Standard Stock Industrial Bearings, Electric Motor Bearings and Precision Bronze Bars in a complete range of sizes meeting all your usual production and maintenance needs. Ask him for catalog.

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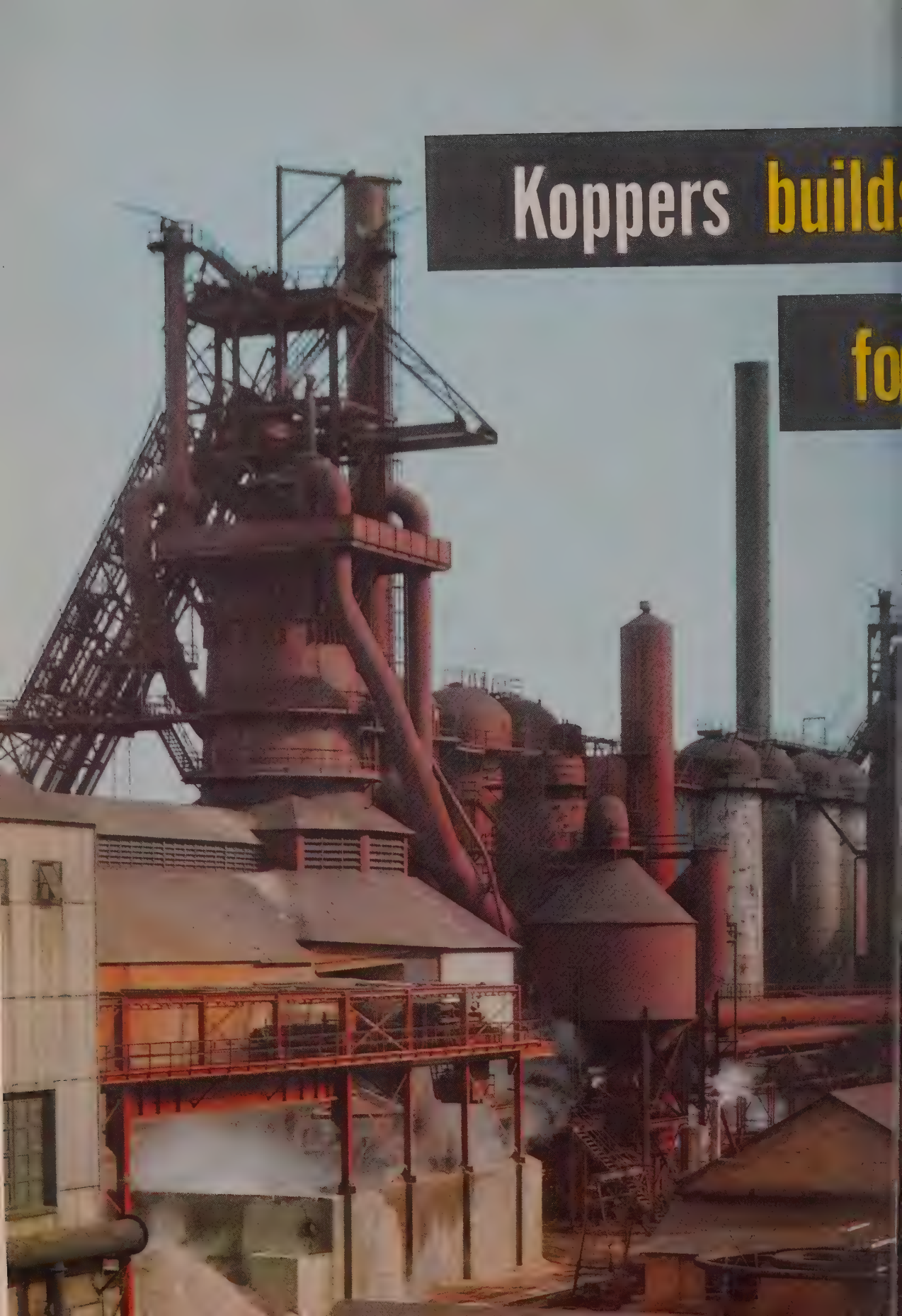
DISTRIBUTORS EVERYWHERE

Bunting®

BRONZE BEARINGS • BUSHINGS • PRECISION BRONZE BARS

THE BUNTING BRASS & BRONZE COMPANY • TOLEDO 1, OHIO • BRANCHES IN PRINCIPAL CITIES


Koppers builds
fo

ew blast furnace

ittsburgh Coke & Chemical

THIS new blast furnace was recently constructed by our Freyn Department for the Pittsburgh Coke & Chemical Company. It has a hearth diameter of 22 feet; a total height, from iron notch to top ring, of 93 feet, 9 inches. Rated capacity is 850 tons of merchant iron per day.

Incorporated in this furnace are the most modern controls and equipment—all of Freyn-Design. Some of these noteworthy features are: automatic charging control . . . coke screening . . . pneumatic bell hoists . . . electric skip hoist . . . stockline recorder . . . hot blast temperature control . . . top pressure equalizer . . . excess gas burner-bleeder . . . stove pressure burners . . . gas washer and cyclone moisture eliminator.

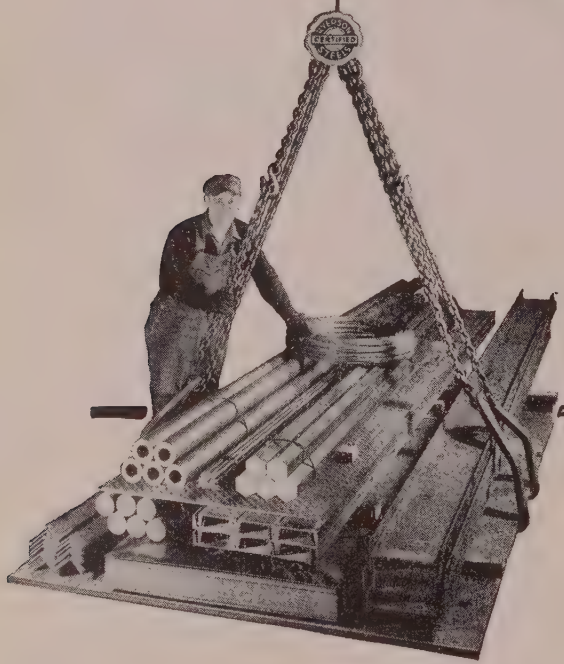
Constructing blast furnaces is just one way in which Koppers serves industry. For any kind of metallurgical construction, you can count on Koppers. You are invited to consult with our Engineers and Management.

KOPPERS®

Engineering and Construction Division

KOPPERS COMPANY, INC., PITTSBURGH 19, PENNSYLVANIA

For quick delivery



# of steel

Call Ryerson

As the world's *largest* steel service organization, Ryerson maintains the *largest* stocks of all available steels.

Ryerson deliveries are fast . . . cover everything from structural shapes and plates of carbon steel and bright sheets of stainless to high-strength alloys.

Ryerson service includes expert engineering aid . . . personal help on your steel problems . . . and sawing, shearing, flamecutting or otherwise preparing steel to your requirements.

With a network of 15 strategically located plants Ryerson brings quality steel quickly to your door. Although some stocks are currently unbalanced from a size standpoint, when you need steel—any kind or quantity—call the Ryerson plant nearest you and we will do our best to meet your every need.

PRINCIPAL PRODUCTS

CARBON STEEL BARS—Hot rolled and cold finished
STRUCTURALS—Channels, angles, beams, etc.
PLATES—Many types including Inland 4-Way Safety Plate.
SHEETS—Hot and cold rolled, many types and coatings
TUBING—Seamless and welded, mechanical and boiler tubes
ALLOYS—Hot rolled, cold finished, heat treated. Also tool steel
STAINLESS—Allegheny bars, plates, sheets, tubes, etc.
BABBITT—Five types, also Ryertex plastic bearings
MACHINERY & TOOLS—For metal fabrication

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETRO
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATT

Metalworking Outlook

Used Cars Perk Up

About 6 million used cars will be sold in 1953, compared with 6.6 million in 1952. Another 3.3 million old autos will be scrapped this year. So, the 1953 used market will be good, but a little below the 1952 pace. Dealers expect second half business to be better than first half volume contrary to expectations in most other segments of the economy. Used auto prices slipped in the first half, but they're now firmer.

Dieselization: Nearly Complete

Curtailed operations by most diesel locomotive builders means that rail dieselization is nearing completion. Diesels now haul about 75 per cent of the nation's rail traffic. As of June 30, 21,766 diesel units were in operation, compared with only 3615 at the end of 1945. Less than 14,000 steam units are now estimated to be in use. Railroads have spent more than $3 billion thus far on dieselization.

Oil Supplies Tighten

You can expect residual fuel oil supplies to be a little tight over the next four to six months. Demand in the past six months was up some 6 per cent over a year earlier, reflecting the much higher levels of industrial activity, plus a considerable gain in use of the fuel by electric utilities. Demand in this half is anticipated to be up 3 per cent over the first half. Currently the barge price in New York harbor is $2.25 per barrel, an 18 per cent increase over the low point reached last February.

Copper Hunts for Business

Now that copper is in good supply, producers are moving to win new markets and improve old ones. Indicative of the trend is Anaconda Wire & Cable Co.'s new campaign to get farms, homes, small industries and commercial establishments to rewire. It pictures many old wiring jobs as now being unsafe and inefficient. Anaconda thinks the drive will mean "multi-million dollar business" for contractors, who will in turn need copper wire.

Average Equipment Age: 10 Years

Some $67 billion worth of producers' durable equipment, valued in today's dollars, was discarded from 1942 to 1952, estimates Institute of Life Insurance. That's about 46 per cent of the estimated $145 billion spent on producers' durables during those years. About one-third of the present

stock of capital equipment is still of an average age of ten years or more. Significance: The obsolescence factor is still important in the outlook for new equipment expenditures, although not as strong as it has been.

Export Curbs Lowered

Controls on exports are easing. For the fourth quarter, the old quantity limitations will be dropped and export curbs will be open-ended on standard rails, plates, structural shapes, oil country tubular goods and large line pipe. Other moves are being taken to make the regulations more flexible. The fourth-quarter quantity limit on nickel-bearing stainless remains the same as the third-quarter figure, 1,841,700 pounds, but expectations are that curbs on that product can be eased next year.

Moral: Be an Engineer

How are engineering graduates of five years ago making out now? Very well, according to an Illinois Institute of Technology survey of its 1948 class. The typical graduate started work in 1948 at an annual salary of $3180. And now he's earning $6340. Over-all, 96 per cent of the 1948 class earn more than $4500 annually; 76 per cent more than $5500; 46 per cent more than $6500 and 17 per cent more than $7500.

Ammunition for Europe

More American ammunition production will be going to Europe. A Senate Armed Services subcommittee heard testimony last week that ammunition stocks there are inadequate for all out war now. Up until now, U. S. ammo output has been about $100 million a month. It will soon drop to a rate of about $200 million annually.

Straws in the Wind

Both National Association of Manufacturers and Chamber of Commerce of the U. S. favor a national sales tax . . . Ford Motor Co. will build its biggest assembly plant at Mahwah, N. J. . . . Form NPAF-1, the NPA report on shipments and consumption of steel, copper and aluminum, will be discontinued after all are in for the second quarter of 1953 . . . Inland Steel Co.'s Clarence Randall will head the new Foreign Economic Commission to study U. S. trade policy . . . The Air Force is making extensive changes in its procurement regulations to conform to new laws passed by the 83rd Congress.

This Week in Metalworking

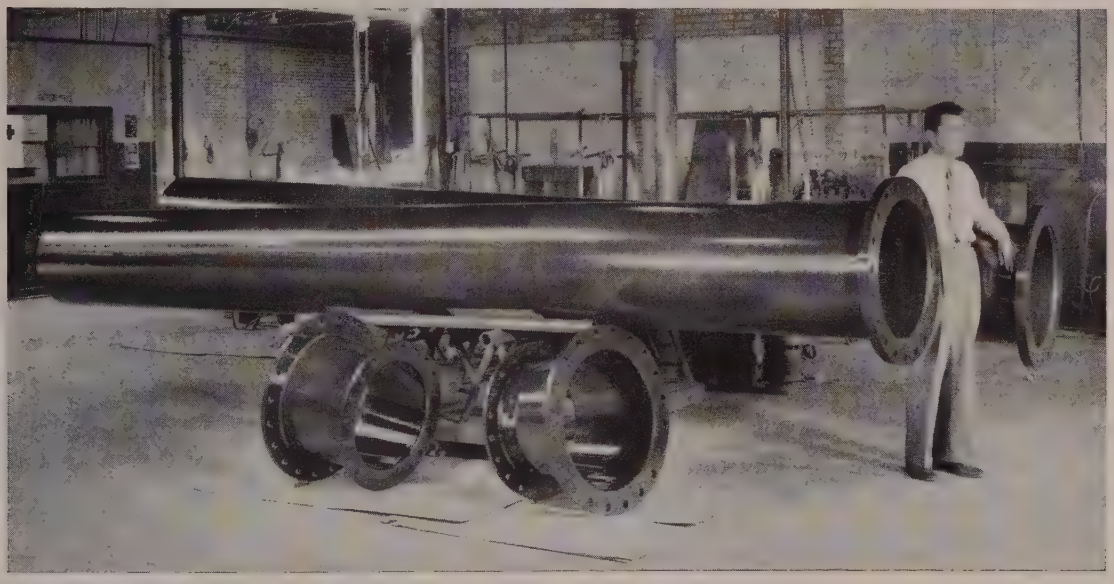
Industrial supply houses expect to do a $4.7-billion business in 1953, compared to $4.5 billion in 1952 (p. 67) . . . General Motors Corp. figures that the damage to future production schedules will be far greater than the $40-million loss suffered at the Livonia, Mich., transmission plant fire (p. 68) . . . Aluminum Co. of America says that American fabricators will suffer as a result of the Justice department's move to block its purchase of Canadian aluminum (p. 69) . . . Labor next year will drive on big companies for productivity wage increases similar to the GM provisions (p. 71) . . . A big market in small companies exists for control instruments (p. 78) . . . Battelle Memorial Institute is optimistic about future iron ore supplies (p. 79).

HERESITE

REG. U. S. PAT. OFF.

Baking Type **PHENOLIC OIL FREE COATINGS** **Self-Curing Type**

Innumerable applications of HERESITE will testify to the protection against practically all metal corroding substances as well as assuring production free of metal contamination. In most cases continuous operating temperatures of 400° F. have no effect on HERESITE baking type coatings. The exceptional high resistance and ability to withstand thermal-shock, vibration and elevated temperature make HERESITE coatings ideal for applications to various equipment.



Illustrated above are 24" dia. x 20' long HERESITE processed pipe which are to be placed in underground service.

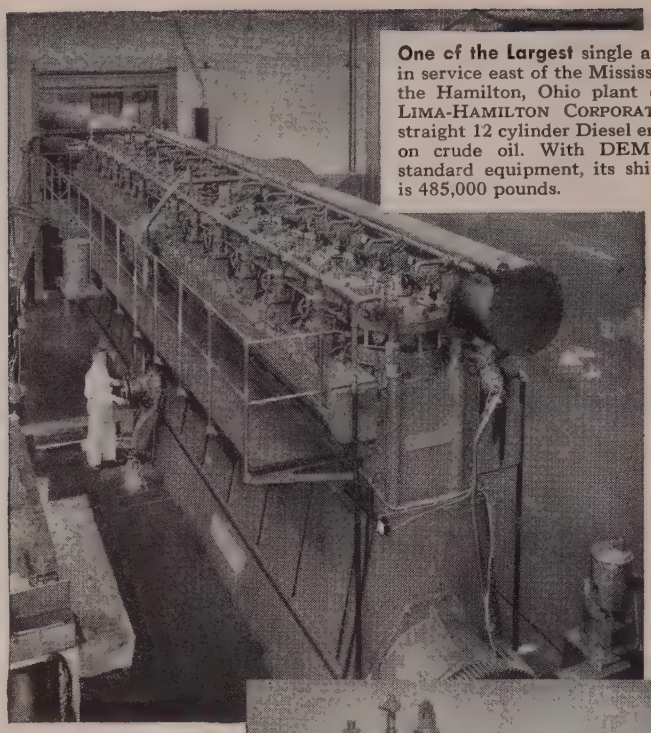
HERECROL

REG. U. S. PAT. OFF.

Our SYNTHETIC RUBBER available in SHEET FORM and as a LIQUID COATING for protection of steel.

HERESITE & CHEMICAL COMPANY

MANITOWOC, WISCONSIN



One of the Largest single acting engines in service east of the Mississippi. Built at the Hamilton, Ohio plant of BALDWIN-LIMA-HAMILTON CORPORATION, it is a straight 12 cylinder Diesel engine running on crude oil. With DEMA stationary standard equipment, its shipping weight is 485,000 pounds.

Nickel Alloys Help build stamina into an Engine that serves a city

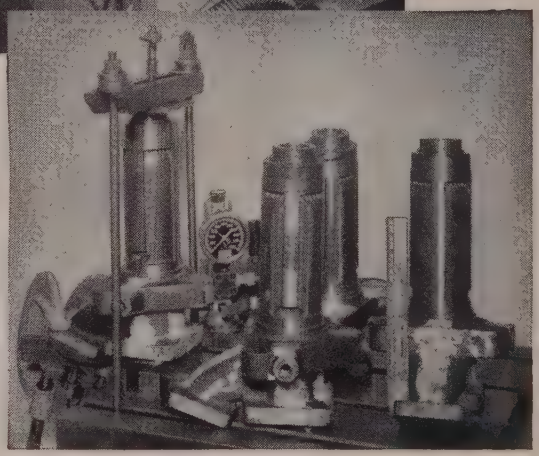
Built to handle the main power load for the city of Decatur, Indiana, this unit shows how nickel alloyed steels and irons are used in advanced design for increased power, quieter operation and longer trouble-free life.

Its forged crankshaft gear ... specified in Type 4340 or 9845 nickel alloyed steel ... provides:

Tensile strength	140,000 psi minimum
Yield Strength	118,000 psi
Elongation	16%
Reduction in area	45%
Brinell hardness	280 to 310

Piston heads are cast in high strength nickel-chromium iron to withstand heat stresses. Cylinder liners are one-piece castings containing .50% to .75% nickel and .25% molybdenum, for resistance to both heat and wear. Carburized nickel-molybdenum steel, Type 4615, is ordinarily specified for cams and rollers, and wrist pins are of Type 8620 nickel-chromium-molybdenum steel.

Consult us on the advantages of nickel in your products or equipment. Send us details of your applications for our suggestions.



Ductile Iron Gas Valve Bodies for HAMILTON Diesel engines undergo an 800-pound pressure test prior to assembly. Steel jackets are welded to these bodies with Ni-Rod 55. The castings are stress relieved for four hours, at 1200°F., and placed in service at 240 BHN. The Ductile Iron bodies prove sounder than those of cast steel, are easier to machine, and combine ample strength and ductility to withstand sudden pressure overloads.

At the present time, nickel is available for end uses in defense and defense supporting industries. The remainder of the supply is available for some civilian applications and governmental stockpiling.

EMBLEM OF INCO SERVICE

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

Grim Warning

Those paralyzing strikes in France last week were noteworthy in that they reflected a far greater array of mistakes and weaknesses than has plagued any first-rate country in many decades. In fact, they almost shout to high heaven that France already may be descending to the status of a second or third-rate power. They also should serve as a grim warning to other nations to avoid the mistakes poor France has made.

Several facts concerning these strikes are significant and important. First, they were not initiated by Communists, although the commies eagerly jumped on the bandwagon after it gained momentum. Secondly, the strikes were not directed against private employers; they were against the government. Thirdly, the purpose of the strikes was to protest so emphatically against the economy measures proposed by the new Laniel government that it would either reverse its stand or be voted out of office.

The incredible situation is as if the employees of the United States government printing office, the Post Office and other federal departments were to strike in an effort to dissuade President Eisenhower from attempting to effect economies in government operations. In France this deplorable situation is the result of a long list of misfortunes and mistakes.

In evaluating these, we should not underrate her misfortunes. France took a terrific physical beating in World War I and a terrific moral beating in World War II. In addition, among the many mistakes she made were at least two that were fatal. One was the disintegration of political power and influence into so many splinter parties that no single party or coalition of parties can form a respected, durable government. Second, was the creeping socialism which through several decades has led to the nationalization of scores of activities that might better be conducted by private enterprise.

As a result of these and other mistakes, French morale is at low ebb at a critical time in world history. Her lesson for us is obvious: Cherish above all else our effective two-party political system and guard with every resource at our command any encroachment by government upon private enterprise.

E. L. Shaner

EDITOR-IN-CHIEF

ONE EVERY 12 SECONDS: According to the Census Bureau of the Department of Commerce, the population of the United States became 160 million at two minutes and seven seconds after 10 o'clock on Monday morning, Aug. 10. Also, according to the bureau, the present rates of addition to and subtractions from the population consist of one birth every eight sec-

onds, one immigrant every two minutes, one death every 21 seconds and one emigrant every 17 minutes. These figure out to a net gain of one addition to the population every 12 seconds.

This is five per minute, 300 per hour, 7200 per day and 2,628,000 per year. This annual increase is just about equivalent to the combined populations of Detroit, Pittsburgh and Utica, N. Y. When one considers how much is required to maintain the people of these cities at their present standard of living, one must conclude that the current substantial growth in population is an important factor in the economy of the nation.

* * *

ELECTRONIC WEIGHING: In World War II the United States Air Force was in need of portable scales that would check the cargo weights of aircraft accurately and quickly at airfields scattered all over the world. Engineers came up with an effective answer by combining two proved devices—the strain gage and electronic instrumentation. The resultant electronic scale (p. 110) now is finding many new uses in industry.

Manufacturers say that from a standpoint of accuracy, electronic weighing probably is no better or worse than weighing with conventional lever scales, but it has a flexibility in application that enables it to solve problems that have defied other methods. Another advantage is that the load cell, heart of the electronic system, reduces all weight information to electrical values, which can be relayed by proper instrumentation to visual scale dials, printers, etc. at nearby and remote points. Enthusiasts expect electronic weighing to fit admirably into the current drive to improve the efficiency of materials handling.

* * *

UNIONS RESPECT TAFT: A rather queer aftermath of the passing of the late Sen. Robert A. Taft is the attitude of rank and file labor union members as expressed in representative labor union publications. Some of the most eloquent eulogies of the late senator have appeared in the labor press.

Labor publication editors have credited Taft with several outstanding contributions to their cause. One is that he softened the House Hartley bill before it became the Taft-Hartley Act. Another was that single-handedly he squelched President Truman's effort to draft railroad trainmen after it had been approved by the House and was before the Senate. Thirdly, right now intelligent labor union chiefs wish Robert Taft were still on the job to stand guard on Taft-Hartley amendments.

They knew he'd be fair. They are fearful that some of the congressional tinkerers will be violently antiunion.

* * *

TO ORIGINAL OWNERS: Reports from England indicate that an actual start has been made in returning nationalized steel properties to private owners. Templeborough Rolling Mills (p. 77) has been resold to British Ropes Ltd. and William Cooke & Co. at $20.30 per share. The Labor government paid $19.30 per share when it acquired the property.

This first step in the disposal of the $8 billion worth of steel properties that were nationalized again focuses attention upon the age-old argument of private versus public ownership. A decade ago the governments in Britain and in the United States favored public ownership. Had the Labor party in England and new-deal and fair-deal parties in the United States continued in power until today, there is a strong probability that public ownership would have been so strongly entrenched that private ownership would now be in peril.

It is too bad the shifts toward the right in Britain and in the United States came so late.

* * *

INSTRUMENT MARKETS: A study of the use of instruments in the metalworking industry (p. 78) indicates that an attractive market potential in that field can be tapped if instrument manufacturers can show management in smaller plants that it can use gages, recorders and controllers as profitably as the larger plants do.

Returns to questionnaires sent out to 3000 plants showed that over 94 per cent of the plants employing more than 500 persons are using instruments, compared with 76 per cent of plants employing 100 to 499 persons and only 44 per cent of the plants employing 20 to 99 persons. Also a higher percentage of the larger plants than of the plants of medium and small size said they expect to increase their use of instruments.

A most important Cargo

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LAKE SUPERIOR IRON ORE • VESSEL TRANSPORTATION
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THE Cleveland-Cliffs IRON COMPANY
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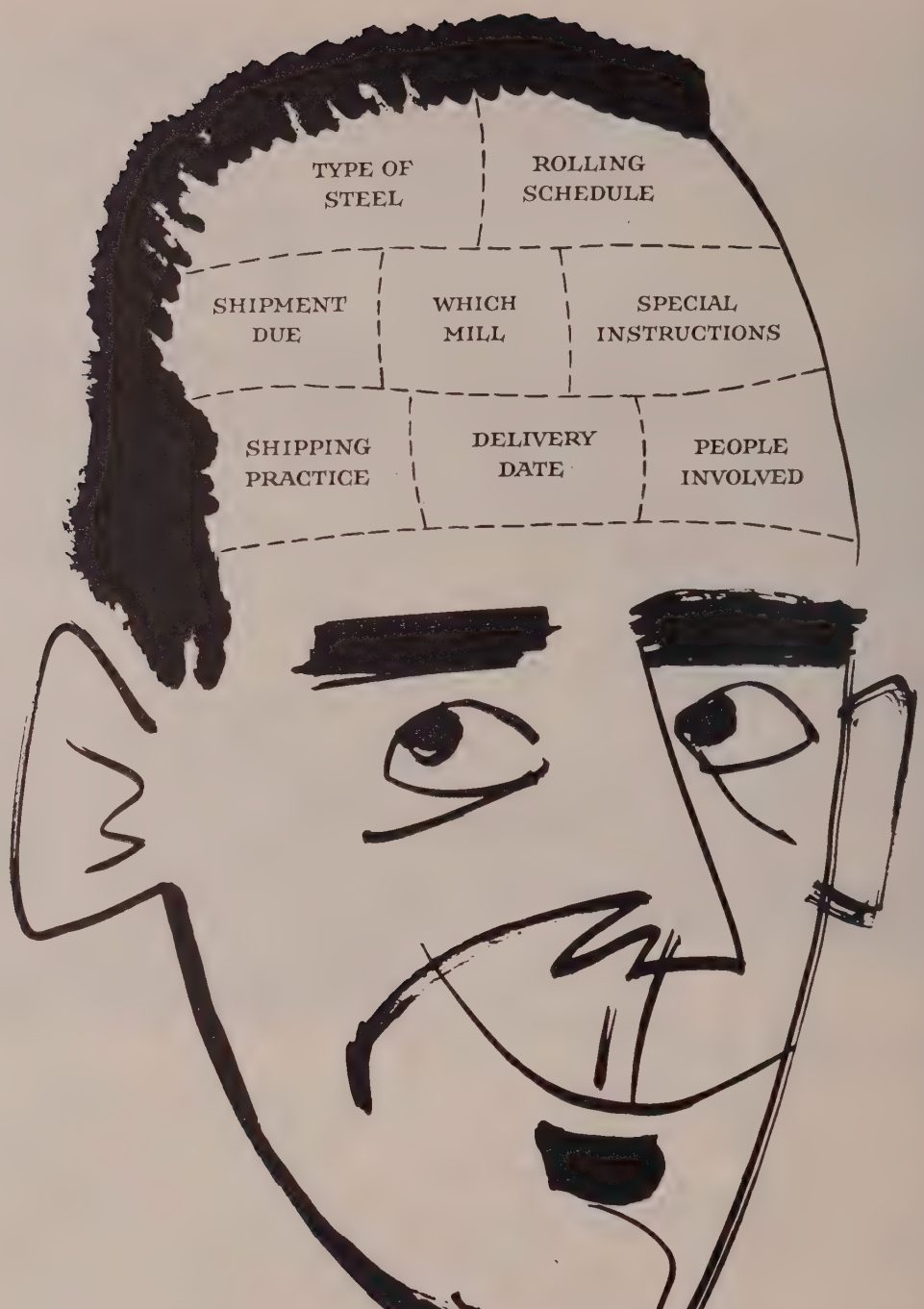

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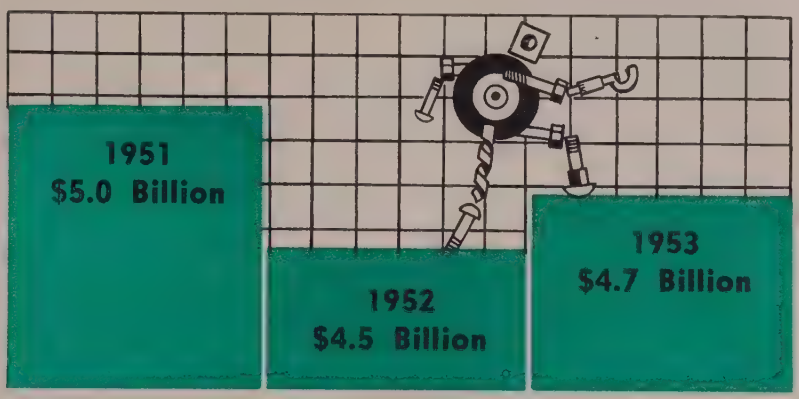


Industrial supply houses step up sales as . . .

Business Weather Stays Brisk

That business barometer, activity by industrial supply houses, shows excellent weather for 1953. But some economic clouds are on the horizon for 1954

INDUSTRIAL SUPPLY houses have rarely experienced busier days; there's no fading of activity in this bellwether industry.

Supply houses, running up sales of from 6 to 20 per cent above those in the first half of last year, are also trimming their sails for the slightly rougher economic weather anticipated in 1954. Overall, 1953 is expected to wind up 5 to 6 per cent ahead of 1952, with a shrinkage of 5 to 8 per cent in the rate of dollar sales looked for around the first of 1954.

Up and Down Again—Late in the second quarter, 1953, supply houses were building up inventory of items which had been in short supply such as larger sizes of bolts and nuts. Even some precision tools such as micrometers appeared on stock bin shelves. Now, they're working inventories down, 10 per cent in some cases, because delivery has improved and large inventories at the supply house are unnecessary.

Generally, delivery from industrial supply houses is "from stock" to "30 to 60 days, depending on the manufacturing cycle of the item involved." Exceptions would be some types of precision tools, diamond wheels, some types of large nuts and large diameter seamless pipe. Even so, that's a much shorter list than that of six months ago. In fact, supply and delivery have improved so much there are even rumors of prices being shaded in one or two lines. When true, that's an unfortunate but sure sign of the return of normal competitive selling conditions.

Reading Sign—There are other signs that, while 1953 will remain on the high sales plateau experienced in the past 2½ years, 1954 will see a return to harder selling. Supply houses are not adding more salesmen as a rule. But where an older man is retiring, two or perhaps three new, younger men are being added to cover the same ground. Old customers are being cultivated thoroughly. Territories are being re-examined for more potential customers. "We can't afford to overlook a single sale any longer," says one supply house sales manager.

Freight costs are getting close scrutiny to take advantage of freight allowances. Minimum freight charges have always been a thorn in the side of industrial supply houses because of their frequent small shipments. Now, shipments and orders are being consolidated wherever possible to take advantage of bulk shipping rates.

Lines vs. Items—The trend is away from carrying more lines in stock and toward carrying more items in the fewer remaining lines. That means the industrial supply house which has a reputation in one type of goods is concentrating on that type; cutting out its lesser known lines, and getting a stock in depth of the known ones.

Specialty houses are partly responsible for that trend since, as their name implies, they only go after the business in a narrow field. A large growth in the number of specialty houses since World War II has forced the old-time general-line houses and departmentalized houses to sharpen up their selling. There are about 1200 general and/or departmentalized industrial supply houses in the country, plus nearly that many small specialty houses. Nobody has been hurt particularly by these developments yet, but they will be when competition for the customer's dollar becomes more intense.

Changes Coming — Many supply houses are streamlining their office procedures and, like Theodore C. Ulmer Inc., Philadelphia, installing more efficient materials handling equipment. Others have had management consultant firms in. Not many changes have resulted thus far—that will wait until 1954.

Right now, industrial supply houses are busy riding their high sales plateau.

Radio-Tv Tube Sales Boom

Manufacturers' sales of radio and TV cathode ray and receiving tubes during the first half of 1953 totaled over a quarter billion dollars, the Radio-Television Manufacturers Association reports. Sales for the month of June amounted to $47 million.

Los Angeles Economics

The Los Angeles boom will not be affected seriously by the end of the Korean war, but possible reduced activity in military and non-military activity could warrant protective planning.

That is the conclusion reached in an eight-month survey by the Committee for Economic Development conducted by the Southern

California Research Council. Sponsored by the Occidental and Pomona colleges, the survey points out that Los Angeles' economy depends greatly upon military aircraft production. Nearly 25 per cent of the nation's total output of that nature is in that area.

More Government Competition

Latest complaint of Defense department competition with private industry comes from the reclaimed aluminum industry. It is concerned with two "sweating" furnaces being installed by the Air Force at McClellan and Tinker Air Force bases. They are open-hearth type furnaces capable of receiving a complete air frame, melting off the aluminum for casting into ingots, and leaving the steel and other metals for subsequent reclamation. The complaint is that private, tax-paying concerns can do this work.

Questioned about the installations, Roger Lewis, assistant secretary of the Air Force, justified them on the basis of "security reasons" and "increased efficiency of operations."

After hearing this statement, Chairman Edward J. Thye (Rep., Minn.), Senate Small Business Committee, requested Defense Secretary Charles E. Wilson to look into the matter and report. He says that unless Secretary Wilson overrules the Air Force, he will conduct full-dress public hearings.

Steelcraft Tries Prefabs

Expects proven industrial techniques to bring success in metal house field where others failed

A MARKET FOR ALL-METAL prefabricated homes can be developed, claims Steelcraft Mfg. Co., Rossmoyne, O. To prove it, the firm is planning to go into the production of component parts for all-metal apartment buildings sometime after the first of the year.

Construction on the firm's new research and development building which is a prototype of a Steelcraft-designed eight-family apartment house is now underway.

Despite Lustron — With several unsuccessful attempts on record for marketing the all-metal home—notably the home of the Lustron Corp., Columbus, O. — Steelcraft claims its approach in "successful industrial techniques" will pave the way to its success.

Featured by Steelcraft is its new insulated metal wall panel for both interior and exterior use. In addition to the proposed apartment house building, the panels can be used for warehouses, office buildings, factories and other commercial and industrial buildings.

Different Approach — The company points out that it does not intend to erect the buildings or sell buildings as a package. It will sell to builders the component parts to be erected in structures of the individual's design.

The new panels will be in standard widths of 24 inches in required lengths up to 20 feet. Normally containing three inches of fiberglass insulation, the panels will provide a heat transfer coefficient comparable to that of an eight-inch masonry wall, the makers claim. Panels will be constructed in 18 gage galvanized steel, 18 gage galvanized color bond steel with one coat of baked enamel, 16 B&S gage aluminum, 20 gage stainless steel, or a combination of any two of these.

Fire Cripples Output

GM's Livonia, Mich., plant was a critical supplier of Hydra-matic transmissions

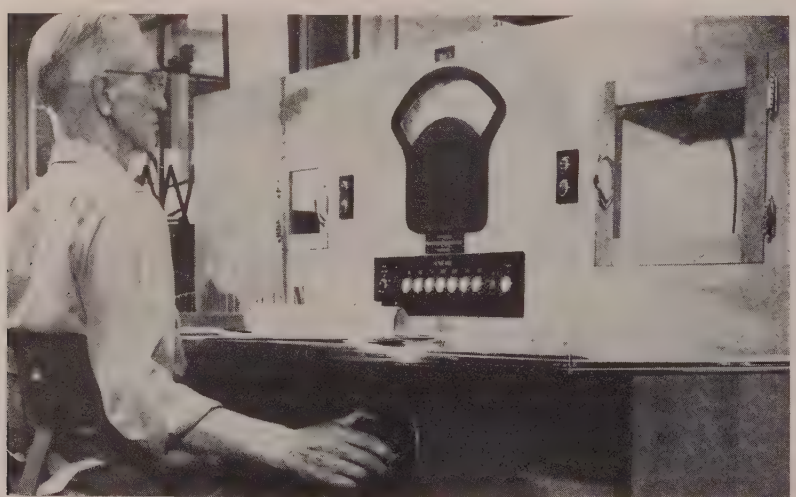
EFFECTS of the fire which destroyed General Motors' Livonia, Mich., transmission plant will be far more costly than the estimated $40 million damage to the plant.

The plant was the sole source of Hydramatic transmissions used on Cadillac, Oldsmobile and Pontiac cars and a major supplier of automatic transmissions for Lincoln, Nash, Hudson and Kaiser. Supplies of Hydramatic transmissions are variously estimated at two days to two weeks by automakers using the device.

Radiating Effects—In addition to the 9000 workers idled at the transmission plant itself, over 35,000 workers will probably be idled for sometime at GM assembly plants alone, owing to the shortage of transmissions.

Damaged also was the Ternstedt Division plant in Livonia, producing T-41 range finders. But the big worry at the moment in Detroit was the severe crimp in GM auto production expected within the next month. Harlow H. Curtice, GM president, said last week the total effect on production is not yet known until the facility at Livonia can be examined.

Recent Change—Production of the transmission had only been transferred to the Livonia plant from the Detroit plant of Detroit Gear & Axle Division within the last month. The four-year-old plant covered two blocks across and about



Jolting Wire for Better Magnets

This new dielectric tester, which handles up to 15,000 volts, is now being used for around-the-clock quality-control testing of magnet wire at Anaconda Wire & Cable Co.'s Anderson, Ind., plant. Anaconda engineers designed the tester

...locks deep. The blaze was ap... ...ly started by a spark from ...ling torch being used to re... ...conveyor.

...ids for Cleveland Firm

...eral Motors Corp., Detroit, a... ...xtend its truck line produc... ...nto the heavier off-the-road ...equipment if an offer to pur... ...the Euclid Road Machinery ...leveland, is accepted.

...President Harlow H. Curtice an... ...nces that the company di... ...s have authorized an ex... ...e of GM common stock for ...e outstanding preferred and ... A stock of Euclid.

...change basis would be one-... share of GM common stock ...ach of the 16,510 Euclid pre... ...l shares and 7.9 shares GM ...on stock for each of the ...0 Euclid Class A shares.

... now supplies diesel engines ...orque converter transmissions ...Euclid whose principal prod... are rubber-tired rear and bot... dump trucks in sizes from 10 ... tons and scraper carriers up ... tons.

...other GM transaction was an... ...ced this week. The company ... sold its stockholdings in the ...n Hertz Driv-Ur-Self firms, in... ...ng Sterrett Operating Service, ...he Omnibus Corp., Chicago. ... terms were not disclosed.

...Awards Research Contracts

...he Atomic Energy Commission ...ounces that 47 unclassified ...ical research contracts with ...ersities and private research ...tutions have been awarded.

...e contracts are generally for ...e-year term and are let as part ...he AEC's continuing policy of ...zing private research labora... ...s in conducting research re... ...l to atomic energy. Value of ... contracts ranged from $3000 to ...,000.

... Buys Equipment Firm

...tis Elevator Co., New York, ac... ...ed Transmitter Equipment Mfg. ... that city, manufacturer of ...o communication and electronic ...ipment. Otis established an ...tronics Division of which Mor... B. Kahn, president of Trans... ...ter Equipment, is manager.

Fabricators Will Be Losers—Alcoa

The 17,000 aluminum fabricators who can't use aluminum in pig or ingot form will be losers if Alcoa is prevented from buying 600,000 tons of Canadian metal, says the company

THOUSANDS of independent aluminum fabricators will be deprived of the metal they need to keep in operation, charges Aluminum Co. of America, if the Department of Justice succeeds in preventing Alcoa from buying 600,000 tons of Canadian aluminum already contracted for delivery from 1953 through 1958.

CANADIAN METAL FOR ALCOA
. . . the Justice department said "no"

That's because the great majority of U.S. aluminum users, some 17,000 firms, require the metal for their use in fabricated or semi-fabricated forms, cannot use it in pig or ingot form—the way the metal comes from Canada. "This basic economic reality is completely lost sight of in the Justice department's argument," says Alcoa.

Irretrievable Loss — In Alcoa's opinion, if its contract is voided, the country will just have to do without that much aluminum since Aluminum Import Corp., distributing company for Aluminium Ltd. in the U.S., has already canvassed other American primary producers and the 150 nonintegrated fabricators which can use primary aluminum as a raw material for all the commitments they could get over the same six-year period.

If Alcoa is able to import the Canadian aluminum, it will arrive in these tonnages: 1953—62,000 tons; 1954—91,000 tons; 1955—107,000 tons; 1956—136,000 tons; 1957—136,000 tons and 1958—68,000 tons.

Alcoa claims the Justice department, in the second phase of a legal action against it, is also attempting to sabotage the program established in 1951 by the U.S. District Court in New York to strengthen the competitive conditions in the aluminum industry. The program was adopted then at the insistence of the Justice department. It involved the sale by Alcoa and various Alcoa officials of about 37 per cent of the common stock in Aluminium Ltd., the Canadian firm. As of June 30, 1953, about one-half, or about $70 million worth, of that stock had been sold. To vacate the stock-sale part of the judgment now would throw the whole judgment into doubt, says Alcoa, and might lead to other antitrust action against the company "based on presently unrevealed concepts of the department."

Diminishing Part—In its argument, Alcoa revealed that in 1939 it produced 100 per cent of the 327 million pounds of aluminum smelted in this country; by 1949, Alcoa's percentage of production capacity had declined to 50 per cent and by 1954, by which time there will be four other primary aluminum producers in the country (Reynolds Metals Co., Kaiser Aluminum & Chemical Corp., Anaconda Copper Mining Co., and Harvey Machine Co.), Alcoa will account for less than 40 per cent of U.S. primary aluminum capacity.

750,000 Building Airplanes

Approximately 50,000 small businesses share in the aircraft defense spending of the country, a recent Air Force survey indicates. The aircraft industry itself employs some 750,000 persons.

Automation: 10-20 Per Cent Progress

AT PRESENT, we are about 10 to 20 per cent along the way to maximum automation, says Henry F. Dever, president of the Minneapolis-Honeywell Regulator Co.'s Brown Instruments Division.

Expanding — While the sale before World War II of apparatus used in automation, such as automatic controlling and recording equipment, represented about 1 to 3 per cent of annual capital expenditures for machinery and equipment, sales of the same devices in recent years have accounted for around 7 to 8 per cent of the yearly volume. Nevertheless, the entire horizon —the complete process of manufacture from field or mine to consumer—remains to be developed.

On the present industrial base, Mr. Dever says the instrument potential could be expanded to approximately 10 per cent of capital purchases. Moreover, an attempt to evaluate the effect of improved technology over the years would indicate a future market of at least 15 per cent.

Another approach to the present situation shows that only 65,000 of the nation's 250,000-odd manufacturing plants buy 80 per cent of the industrial instruments produced (see p. 78). Refinery operations epitomize automatic control and as a result workers on a fluid catalytic cracking plant number about six or seven.

Oil, Steel — Although the petroleum industry has really capitalized on the efficiency that automatic controls provide to cut costs, since it is a relatively new industry a better summation of the value of instrument controls is provided by the steel industry.

With these controls, 10 people in a rolling mill can turn out 5000 feet of strip steel a minute. In previous times 50,000 blacksmiths probably could not do as well.

Ore Unloading Record Set

A new tidewater record for unloading foreign iron ore was established at the Baltimore & Ohio Railroad Co.'s Curtis Bay Ore Pier, Baltimore, Aug. 8. A 20,560-ton cargo of ore from the Bomi Hills deposit in Liberia was unloaded in 13 hours and 55 minutes.

Officials of Ramsay Scarlett & Co., operators of the pier, credited the record to the speed of the two tower unloading cranes and the conveyor belt system which carries the ore to the receiving bins where it is automatically weighed and dumped into railroad cars at the rate of a car every 120 seconds.

Great Lakes Rebuilds Furnace

Great Lakes Steel Corp., Detroit, subsidiary of National Steel Corp., will rebuild and double the capacity of its Blast Furnace A at its Zug Island plant. Koppers Co. Inc., Pittsburgh, will begin the work next spring.

When completed, the furnace will have capacity of about 500,000 tons a year, increasing the total Zug Island capacity to about 2 million tons a year. The rebuilt furnace will be of Freyn design and will be almost identical with the Great Lakes D furnace which was blown in last September. It will be 109 feet tall with a hearth diameter of 28 feet.

National Steel operates a total of 12 blast furnaces at the plants of Great Lakes, Weirton Steel Co., Weirton, W. Va., and Hanna Furnace Corp., Buffalo. They will have annual capacity of approximately 4.8 million tons.

More Armor Plate for Lukens

Lukens Steel Co., Coatesville, Pa., has received authority from the Navy department's Bureau of Ships to begin construction in October of a $10.5 million armor plate plant.

Gilboy & O'Malley, Philadelphia, are consulting engineers on the building, which will be adjacent to Lukens' present heat treating plant. Major equipment will include two continuous heat treating furnaces. Additional equipment includes two cold plate levelers.

The new facilities will greatly increase the production of armor plate, since behind them is the potential of Lukens' 206-inch mill and the capacity of the 120-inch, 140-inch mills. Completion of the Navy plant will increase to more than $32 million the value of plant expansions at Lukens since World War II.

Strategic Metals Get Aid

An aid to miners and millers of tungsten and manganese ores and concentrates is H. R. 2824. It extends the government's purchase program, which encourages discovery, development and production of these metals, to July 1, 1958. Other minerals in the purchase program—mica, chromite, asbestos, beryl, etc.—still remain under the July 1, 1956, expiration date.

Dravo's Sales Formula

William K. Fitch, chairman of the board, Dravo Corp., Pittsburgh, outlined the following nine point sales formula to meet the stresses of competition ahead:

1. Treat customers honestly and be sure they are satisfied.
2. Know more about your products than your competitors now about theirs.
3. Sell the good name of your company not only to customers but also to the public. The annual report of a company with sound financial standing is a good sales tool.
4. Plan ahead.
5. Help keep the company's costs down so that the salesman is aided by having prices that are competitive.
6. Suggest new products to widen the field of sales and the company's operations.
7. Co-operate with other divisions of your company. Familiarize yourself with its products and pass on any sales leads.
8. Keep your morale high no matter what setbacks or conditions occur.
9. Never forget business ethics and discredit a competitor.

ductivity: A Big Labor Issue in 1954

Unions next year will hit big companies for GM-type contracts providing for annual improvement increases. Some 10-11 per cent of all firms now have such provisions

CH FOR a big labor push in 5 to win productivity clauses r to that in the General Mo- contract.

e drive will come on larger anies with 500 or more em- es, probably mainly in the and steel fabricating industry. clause is chiefly in United Worker contracts today. An ated 10-11 per cent of all lworking firms now give pro- vity boosts, and the great bulk ose companies employ 1000 or people.

tfalls—As preparation for the e, it's wise to take a look at uctivity. As the charts on the indicate, there's no such thing uniform productivity gains ughout all industry. There's ly uniform improvement even in an industry segment. Not of the eight here listed has consistent for more than a years at a time. There's prob- even little consistency within mpany on the matter, although e firms may closely approach a dard.

eneral Motors Corp. evidently red that it did in 1948 when first granted productivity in- ases. It calculated that the in- ased production per man-hour ughout its operations averaged ttle more than 2 per cent, which that time meant a 3-cent-per- r wage increase. That formula s in effect until 1950 when the rent five-year contract was otiated. Then, on the basis of wage talks rather than new dings about productivity, the 3 its was boosted to 4. Again this r, an increase in the productiv- factor was negotiated, and it's w 5 cents per year.

Average — Council for Techno- ical Advancement, an affiliate of chinery & Allied Products In- tute, points out that past studies productivity indicate output per n-hour in manufacturing in- eased on the average about 3 per nt per year. But that figure is only an average and of doubtful use when the specific problem of a company-union contract is involved.

The council also warns that productivity figures within a company or industry can often be misleading —even when the figures are soundly based and carefully compiled. For example, business conditions can profoundly effect productivity even though worker attitude is good and plant re-equipment is high.

The situation in machine tools proves the point. Business conditions were poor for the industry before the start of the Korean war. As the council says, "In many industries as total output rises and falls, output per man-hour rises and falls."

The Major Influence—Technology is probably the most important single factor determining the level of productivity over the long run. High capital investment outlays, with an increasing proportion recently going to equipment as compared to industrial plant, have resulted in both an improved quantity and quality of production.

Other factors which influence productivity include standardization of products, availability of parts and components and the efficiency of management.

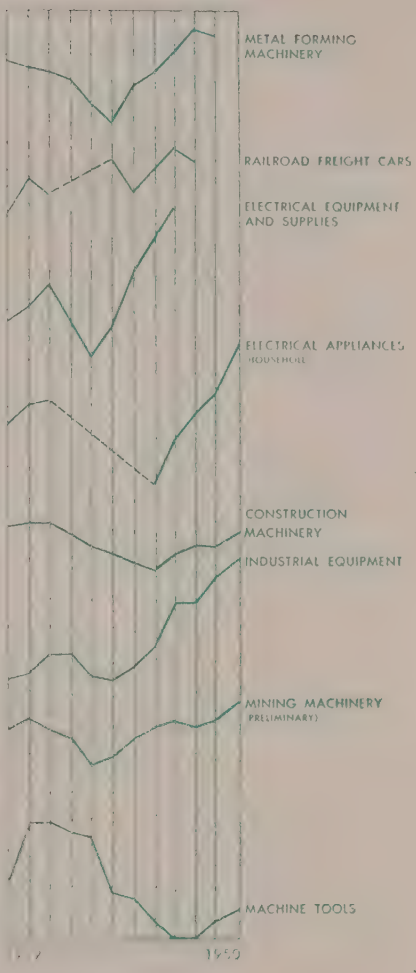
What To Do—If you have been confronted or expect to be confronted with productivity demands, labor and productivity experts advise:

1. Know the facts about the improvement in output per man-hour in your company.

2. Try to keep part of that improvement for profit, arguing that some should go as a managerial increment because of management efficiency and investment.

3. If you grant a productivity clause, give it on the basis of your company's experience, not on your industry's or the general economy's. Try to keep your productivity grant strictly on that experience and not on a negotiated basis.

PRODUCTIVITY INDEXES
(Output per man-hour)
1939 equals 100



Source: Council for Technological Advancement based on Bureau of Labor Statistics figures

Steel Wages: Highest Ever

Employment in the iron and steel industry during June reached a new high level of 690,200 as the average hourly wage of workers rose to $2.263, the highest ever attained, and the average number of hours worked remained unchanged at 39.9 hours per week.

The $2.263 average hourly payment to wage earners was $.041 higher than in May and $.311 more than the average for the first five months of 1952, prior to the strike.

The estimated total payroll for the industry in June was $282,127,000, about $1,174,000 above the month of May. Moreover, the total for the first half of the year, estimated at $1,671,320,000, exceeded the 1946 payroll for the industry.

Freight Absorption Legislation: A Must

Plans already are in the making for congressional studies. The whole scope of antitrust laws may be in for overhaul as the issue is aired

LEGISLATION to clarify the freight absorption issue will probably emerge out of the next session of Congress.

As now constituted, the Federal Trade Commission approves absorption when done in good faith, but the composition of that body changes over the years. Therefore, something permanent and clear is needed on the statute books (see STEEL, Aug. 10, p. 54).

Bewildering—Present laws affecting absorption are ambiguous and pertinent court cases do little more than confuse the already ambiguous situation. So industry men, trade commissioners and congressmen now agree that legislation is essential. What kind of legislation? Chairman Chauncey W. Reed (Rep., Ill.) of the House Judiciary Committee outlined for STEEL his thinking on the matter, which parallels that of a substantial number of congressmen.

He proposes that his committee select certain industries "in which freight absorption and delivered pricing are factors and then determine with respect to these industries the impact of existing law on pricing practices and the effect of regional location, employment and new development on these practices. Legislation is essential because of the uncertainties in the law—as written, administered and interpreted."

One Attempt—Sen. Homer Capehart (Rep., Ind.) introduced a bill which would write into law the principle that a seller may lower his price to one customer to meet the price of a competitor without violating the Robinson-Patman Act. The Senate Judiciary Committee, however, failed to bring the bill out before Congress adjourned. The reason was that freight absorption was only one aspect of the entire antitrust legislation problem on which the administration has not yet presented its proposals.

Chairman Reed plans special hearings on freight absorption and pricing practices "which will contain such data and information as to form a body of economic data upon which sound and clarifying legislation can be based."

REP. CHAUNCEY W. REED
. . . outlines freight absorption ideas

How Far Is Legal?—"Businessmen, both large and small," he states, "have been reluctant to adopt certain pricing practices, particularly the absorption of freight, in selling their products throughout the nation. There has also existed substantial confusion in the minds of business management as to the extent to which they may meet in good faith the lower price of a competitor without running afoul of the Robinson-Patman Act and other antitrust laws. In these two areas there exists a serious need for re-examination.

"If the imminent threat of antitrust litigation actually deters businessmen from actively engaging in vigorous competition and promotes price rigidity and local monopoly, then the very purposes of the Robinson-Patman Act and other antitrust laws are being frustrated. The situation calls for neither repeal nor emasculation, but intelligent clarification."

Pattern Necessary—Some guideposts with respect to the righ absorb freight to meet competi in good faith must be framed Congress if businessmen are to free to compete effectively, congressman declares.

When the issue does come up Department of Justice, Fed Trade Commission, Departmen Commerce, and all other intere government agencies and segm of industry will be asked to their views.

SBA Promotes Private Finan

Co-operation between the go ment and the business comm will be the keystone of the Small Business Administra which replaced the Small De Plants Administration, says liam D. Mitchell, the administ Since he construes the term business to mean over 90 per of all privately financed bus in the country, he will aim fo good health of all busines largely stimulating industria business expansion with p funds, rather than gover handouts.

Mr. Mitchell will try to hav er states follow the example number of New England sta establishing "development corporations," by means of "the states have found a w getting bankers and other bus men together to provide fin that banks could not direct dertake." He also suggested each state might encourage trial foundations and other munity-financed corporatio supplement the customary s of local chambers of comme that industrial enterprise wo stimulated in their communi

The SBA itself is empowe approve loans under certai ditions up to $150,000 out o volving fund of $55 millio thermore, disaster loans ma be made out of a revolvin of $275 million.

Rural Telephone Study

North Electric Laboratori has been granted approv erecting experimental radi tions at Galion and Kenton, research and development c ing low-cost telephone comm tion in rural areas.

Iron & Steel Council Nears Reality

Now is the time to let Commerce officials know that you want your industry represented in the organization. BSA, under new name, will become operative Sept. 1

PLANS for the Commerce department's proposed Iron & Steel Council, which will be an advisory unit of the organization to succeed the National Production Authority, are nearing the final stages. If you think your industry should be included in the council, now is the time to act.

At the request of the Department of Commerce, STEEL is recommending a list of industries which should serve on this advisory council. Interested industries nevertheless are asked to take direct action so they will not be overlooked. They should write to Assistant Secretary of Commerce Craig R. Sheaffer, under whom the council will function.

Be Prepared—BSA, which stands for Business Services Administration and not Boy Scouts of America, is the present moniker of NPA's successor, but officials are seeking a more expressive name for it. Regardless of name, the Scout motto of "Be prepared" applies to the new agency, because its main function will be to work under the Office of Defense Mobilization in developing a program for complete and immediate mobilization of industry in case of an all out war. It will become active on Sept. 1.

In carrying out this function, BSA will be organized along the lines of NPA. It will consist of 23 industry and commodity divisions, each headed by a man borrowed from industry on a "without compensation" basis. Alongside him will be a Commerce career officer to take care of the administrative functions. Buttressing him will be an industry advisory committee.

Aluminum, Too — In addition, there will be a number of councils to advise in the crystallization of policies affecting certain key industries. Besides the Iron & Steel Council, present plans call for an Aluminum Council.

Actual organization of the councils will be delayed until the Commerce department is assured by the Justice department that the latter will not attempt to use acts of these councils and industry advisory committees as bases for antitrust procedures. Such assurance is expected.

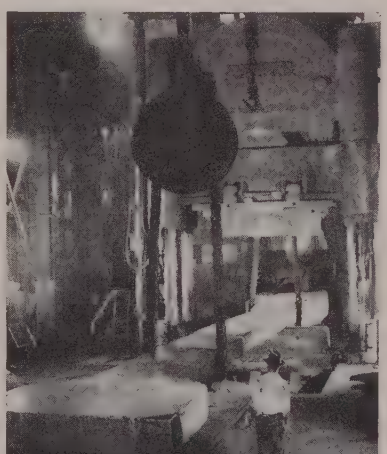
No Limit—Present disposition is to place no limit on the number of industries having representation on the Iron & Steel Council. One estimate is that the actual number will be about 40, but an informed spokesman says the figure may be much higher. Officials express the hope that membership will be sufficiently broad so that "there will be no justifiable complaint subsequently of nonrepresentation."

Some industries certainly slated for membership include ferrous foundries, pig iron producers, structural steel fabricators, forging manufacturers, refractories producers, rolling mill and steel plant equipment producers, machine tool makers and a host of other consuming industries, all in addition to the basic steel industry itself.

Exclusive—In addition to the Iron & Steel Council, there will also be a Steel Industry Advisory Committee made up exclusively of representatives of the steel industry. The two groups will be entirely separate.

One of the big reasons for renaming BSA is the confusion that would probably arise out of the fact that Small Business Administration—SBA—is already on the books. The two organizations will not operate in the same orbit; therefore a new and more descriptive name is being sought for the former. Congress has appropriated $4.2 million for the agency, most of which will be spent primarily to push ODM objectives. The original request was for $7 million in fiscal 1954.

As far as is known, BSA will not absorb any of the functions of existing Commerce agencies such as the Office of Business Economics, Office of International Trade and Office of Technical Services.



King-size Forging

World's longest (110 feet) forging in fourth of five heats goes under Bethlehem Steel Co. hydraulic press at Bethlehem, Pa. Forging is one of 18 column sections of giant 50,000-ton die press being built to produce airframe components for the Air Force

Appointments in Washington

Samuel A. Crabtree, Republic Steel Corp., has been appointed assistant administrator of NPA in charge of the Metals & Minerals Bureau. He succeeds William J. Stephens who has resumed his duties as assistant general manager of sales, Bethlehem Steel Co.

H. J. Wallace, vice president in charge of sales, National Tube Division, U. S. Steel Corp., has been appointed director of NPA Iron & Steel Division, succeeding Mr. Crabtree.

Harry L. Smith Jr., staff manager of product sales for Aluminum Co. of America, has been appointed director of NPA's Aluminum Division, succeeding T. A. Lynch who returns to Reynolds Metals Co.

Arthur F. Burns has been appointed chairman of the President's Council of Economic Advisers. He has been the sole member of the council since President Eisenhower assumed office. Two member appointments will be made later.

Dr. A. B. Kinzel, president, Union Carbide & Carbon Research Laboratories Inc., and Dr. John A. Hutcheson, vice president of Westinghouse Electric Corp. in charge of research laboratories, have been elected chairman and vice chairman, respectively, of the Naval Research Advisory Committee.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Top-ranking civil servants are alarmed about their jobs as the President maneuvers for power to remove officials who refuse to further his policies

JOB UNEASINESS is at an all-time high in Washington these days.

The uncertainty has been great at the lower and middle echelons for some time because of the Eisenhower economy drive. But now it has reached the high job levels.

The Reason Why—That's because of a new Schedule C in the Civil Service Commission classifications. As of late last week, 55 top men who had been under merit system classifications had been transferred to Schedule C, set up to cover officials in policy-making and confidential positions in government. The transfer means that those men involved are now subject to dismissal if considered disloyal to the present administration. They could not have been dismissed so easily under the merit system classification. Probably few of those will be dismissed for any disloyalty, but the job uneasiness has increased markedly nevertheless. And expectations are that more merit classification men will be shifted to Schedule C.

Why get concerned about the relatively few men so transferred when some 2.4 million people will remain under the merit classifications in civil service? The alarm arises because the "relatively few" are also an important few who run departments and agencies. When they're worried about the stability of the civil service system, some of that worry is transferred to the civil servants—often many—who work for them.

Example—Men who have been shifted to Schedule C include Bureau of Mines officials, such as T. H. Miller and W. C. Schroeder, assistant directors; Joseph H. Hedges, special assistant to the director; Oliver C. Ralston, chief metallurgist; Dr. A. C. Fieldner, chief fuels technologist; and E. D. Gardner, chief mining engineer.

The history of such tempests is that they subside with most of the worries proved groundless. Time will tell about this one. Several men thus far involved are looking for jobs in private industry. Because of the difficulty of getting good men in government, that's bad. Even so, nobody in Washington quarrels with President Eisenhower's determination to get rid of top officials who refuse to further administration policies.

COEBG Appointments . . .

Members have been appointed to the new 12-man Commission on Organization of the Executive Branch of the Government, but no attempt will be made until the end of the normal vacation season in September to set up this new "Hoover Commission" and get it going. The members:

For the President: Former President Herbert C. Hoover (chairman), James A. Farley, Attorney General Herbert Brownell Jr. and Arthur S. Flemming, director of defense mobilization.

For the Senate: Senators Homer E. Ferguson and John L. McClellan, Cornell Engineering Dean Solomon C. Hollister and American Bar Association President Robert G. Storey.

For the House: Representatives Clarence Brown and Chet Holifield, former Ambassador to Great Britain Joseph P. Kennedy and executive director of the old Hoover Commission, Sidney A. Mitchell.

Budget Bureau Study . . .

Pending before the Bureau of the Budget is an application by the Federal Trade Commission to have Robert Heller & Associates Inc., Cleveland, survey the commission's operations at a cost of $40,000. Purpose is to pave the way for reorganization on a more efficient basis and set up certain new units, particularly a Bureau of Consultation aimed at advising businessmen and industrialists as to the status of proposed actions under the anti-trust laws.

Rose by Any Other Name

Treasury Secretary George Humphrey has decreed: "The Bureau of Internal Revenue shall hereafter be known as the Internal Revenue Service." In the interest of economy, letterheads and forms now on hand will be used up so months will elapse before the new name appears on communications to taxpayers. No celebration is planned

Navy Casting Facility Starts . . .

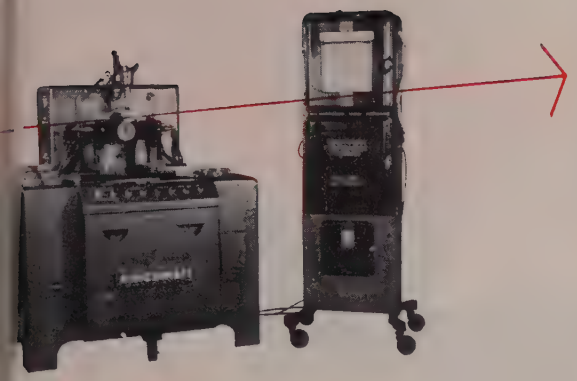
New precision investment casting facility at the Michelson Laboratory, Naval Ordnance Test Station, Inyokern, China Lake, Calif., has been placed in operation. It is to be used "for development work on prototypes and the experimental production of complex ordnance components."

Handicapped Agency Bill . . .

S. 2570, introduced by Sen. James E. Murray (Dem., Mont.) in collaboration with other senators would create a Federal Agency for the Handicapped whose sole responsibility would be programs to rehabilitate the estimated 30 million handicapped persons in the United States.

yesterday

It's a far cry from the working model of the early Cincinnati Flamatic hardening machine shown at left to the "do-the-impossible" machines being run off today in the Flamatic Heat Engineering Laboratory. While the early machine hardened small gears in actual production and (among other things) helped to break a critical bottleneck in production of automatic 90 mm. gun loaders . . .

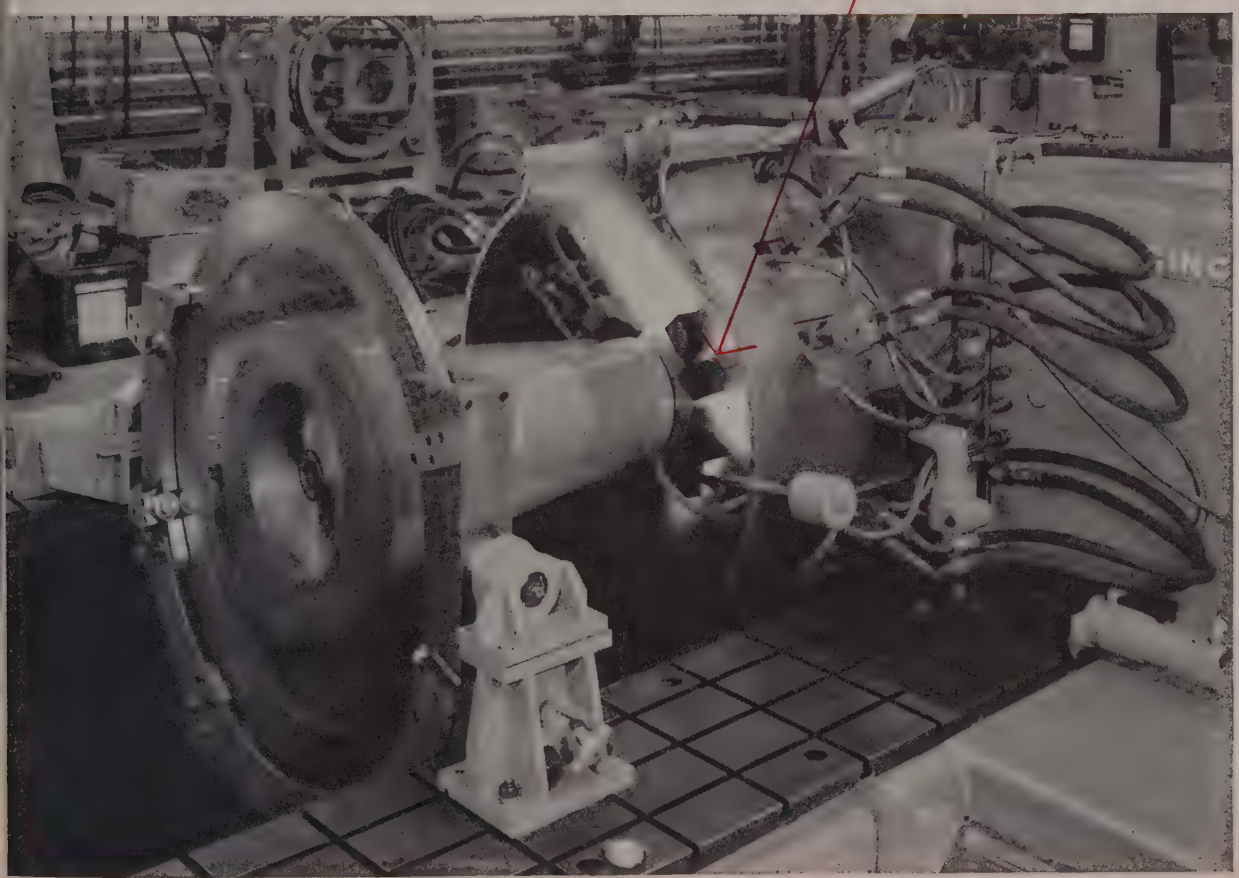


today

. . . one of Cincinnati's latest Flamatics (below) is hardening ball retention raceways in the assemblies for mounting propeller blades to go on aircraft we can't talk about. Races must be surface hardened to rigid specifications, before bearings are installed in the large assemblies. The work holding fixture by itself is quite a masterpiece. While Flamatics are getting bigger and more versatile, the original principles still apply: concentrate heat, control temperatures and confine hardness.

what's new

n flamatic selective surface hardening



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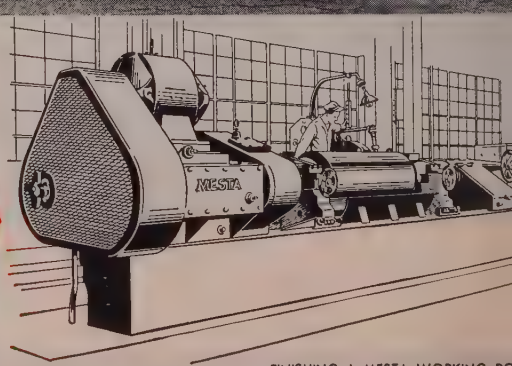
MESTA 42" FOUR-HIGH, TWIN-STAND HIGH-SPEED SKIN PASS MILL INSTALLED IN A LARGE EASTERN STEEL PLANT



FINISHING A MESTA WORKING RO
IN A MESTA HEAVY DUTY ROLL GRIN

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MESTA MACHINE COMPANY

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uture Foreign Aid: Private Capital?

Recognition of the role private investment capital could play in foreign countries reappears. It's one way to save taxpayers' dollars. That's one of two new trends in U. S. aid

NTERNATIONAL TRADE is in a ate of flux, rapidly changing from condition of wartime scarcity to ie of peacetime plenty. And amid ich rough-and-tumble developents, the U. S. is redirecting its id to foreign countries.

Two undercurrents grow stronger and may well form the basis f future aid programs: The imortance of private investment in oreign countries has been "rediscovered"; aid is to be continued o foreign countries trading in strategic materials behind the Iron Curtain.

Words Not Embargoes — President Eisenhower, following requirements of the Battle Act which call for either cessation of aid or explanation from the President when a recipient nation trades with Communists in strategic materials, said halting aid to Britain, France, Norway and West Germany "would clearly be detrimental" to American security. He said the four countries shipped strategic materials at least partly "upon the conviction that the margin of strength of the free world over that of the Soviet bloc was being increased by the resulting two-way trade."

Other sources have lately been suggesting increased trade with Iron Curtain countries may be a stronger move toward peace than an airtight boycott (see STEEL's editorial, "First Things First," Aug. 10, p. 49). Sentiment is growing that since it's practically impossible for the U. S. to keep Western Europe from increasing trade with Eastern Europe in the return of competitive world markets, the U. S. might well make use of such trade in its peace program.

Money, Money—Another relatively neglected means of bolstering foreign trade is encouragement of private U. S. investment to go overseas. At least one prominent research organization, Brookings Institution, says one of the minimum requirements necessary to the reconstruction of the international economic system is ". . . action by all countries to rebuild the network of international investment."

The government hasn't been napping on the problem and only last month Commerce department released part I (of three parts) of a study on obstacles to private investment abroad and ways to surmount the obstacles. Titled "Factors Limiting U. S. Investment Abroad, Survey of Facts in Foreign Countries," part I is available from Commerce department field offices for 50 cents each.

Look for increased investment overseas in the next year and for continued emphasis on building up foreign trade. The administration has indicated it will use its discretionary powers to make the way easy for both U. S. exports and imports. The important thing: Keep trade moving as a substitute for dollar aid; let private money take over investment needs abroad.

German Steel Prices Shrink

German steel prices for the home market were reduced 3 to 5 per cent in July, but it still isn't enough. There's talk of reviving the so-called avi-agreements which provide for rebates from steel producers and steel processors to machinery and other exporters of goods containing a high percentage of steel. These are intended to bring German export prices for steel-containing goods down to world market prices. Watch for reactions from the Montanunion of the European Coal & Steel Community which forbids all types of export subsidies.

Denationalization Begins

First parcel of some $8 billion worth of nationalized steel properties was sold back to its original owners in England as the British denationalization of the steel industry got underway. Templeborough Rolling Mills was resold to British Ropes Ltd., and William Cooke & Co. The private firms paid $20.30 a share for stock in the company which the government acquired for $19.30.

Sir John Morison, chairman of the British Iron & Steel Holding & Realization Agency, said securities of one of the "Big Seven" steel firms would go on the block next fall: Colvilles, Dorman Long, Lancashire Steel, Stewarts & Lloyds, United Steel, Whitehead Iron & Steel and John Summers & Sons. Smaller firms may be offered for sale between sales of larger ones.

For Big Pull in Jamaica

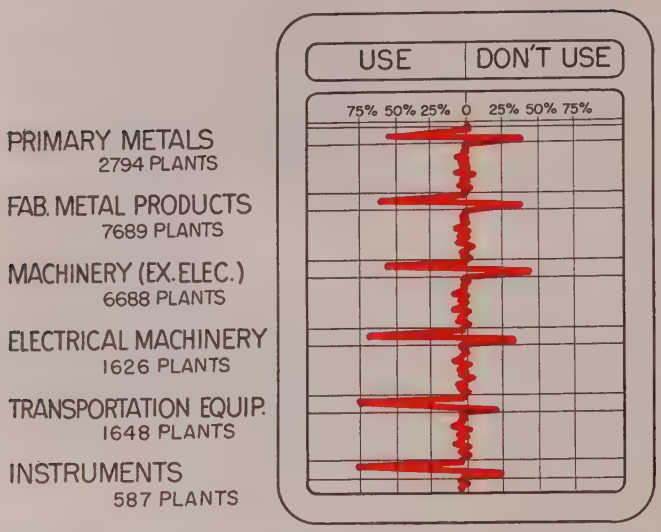
This reel of 15,500 feet of wire rope made by Bethlehem Steel Co. is on its way to Jamaica where it will become part of nearly 14 miles of rope in one of the world's largest monocable tramways. Bauxite will be carried on the tramway to a port for shipment to U.S.

Record U. K. Tool Output

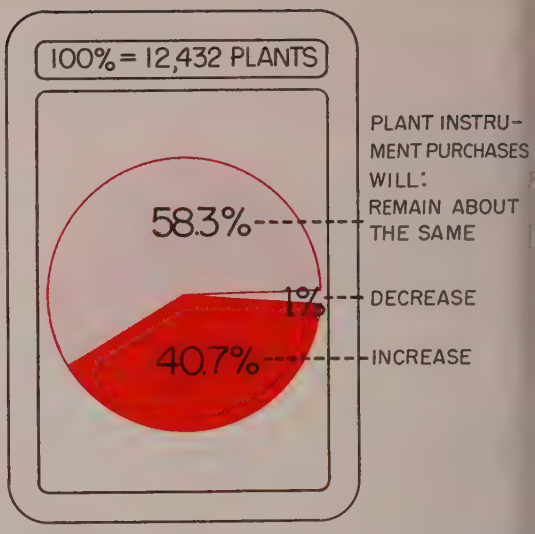
British machine tool builders delivered tools at an annual rate of $207 million in the first two months of 1953. That's a record level of output. British tool builders had increased production from $112 million annually in 1948 through 1950, $147,580,400 in 1951 and $168,602,000 in 1952.

Brazil To Pay Up

All past due dollar accounts in the U. S. will be paid by the end of 1953 according to an arrangement agreed upon by the Brazilian government and the Export-Import Bank.



Number of Plants Using Instruments—By Industries



Instrument Purchases—Next Five Years

Instrument Makers' Gage Shows Small-Plant Sales Potential

ONE ROUTE TO MORE SALES in the instrument industry: Show the little fellow how he can benefit just as much by using gages, recorders and controllers as the large plants can.

That's the conclusion which is indicated in STEEL's latest market research study made at the request of instrument manufacturers. The returns to questionnaires sent out to 3000 plants in the metalworking industry showed that only 59 per cent of the plants are using gages, recorders, and controllers.

Big, Little—However, a large divergency in the use of the instruments is shown between the large and small plants. Over 94 per cent of the plants employing more than 500 persons are using the instruments, compared with 76 per cent in the 100-499 group and only 44 per cent of the plants employing 20-99.

Included in the plant representation of the survey were those in primary metals production, fabrication of metal products, nonelectric and electrical machinery, transportation equipment and instruments.

Good Health—A healthy market ahead is indicated in the respondents' answers that many plants are thinking of switching from the "batch" to "continuous process" in some of their operations. Also, a large percentage said that they expect to increase the quantity of the instruments they are using in the next five years.

Eleven per cent of the plants already using instruments said they are thinking of switching from the "batch" to "continuous" process. This market potential, of course, does not include those plants not using instruments who might also switch from the "batch" to "continuous" process in some operation and by so doing would need instruments for the new process.

Need Increasing — The larger companies who already are the greatest users of gages, recorders and controllers show most of the inclination toward greater use of instruments. Over 46 per cent said they expect to increase their instrument use. The percentage in the 100-499 employee group was 41.6 per cent and in the 20-99 group 37.9 per cent.

Chief markets, in numbers at least, are with the fabricated metal products, nonelectrical machinery and primary metals producers. According to STEEL's "Continuing Census of Metalworking", there are over 17,170 plants in these classifications.

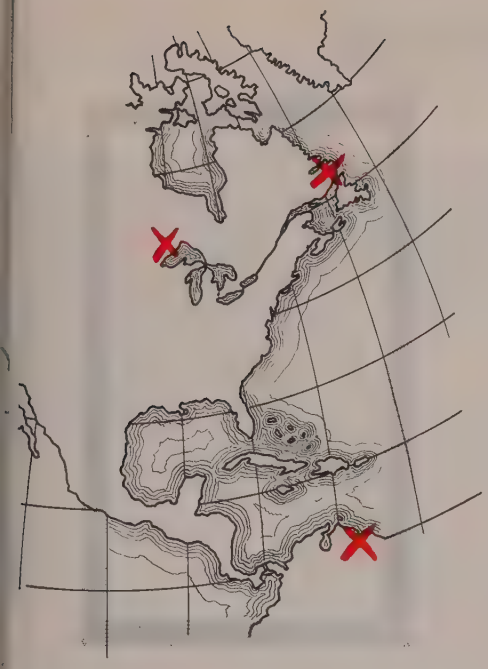
Electric Preferred—What types of gages, recorders and controllers do these plants prefer? Nearly 54 per cent definitely prefer electric, 28 per cent have no preference, and 18 per cent named pneumatic or electric, electric or hydraulic, pneumatic or hydraulic, or said it depended upon the application.

The large plants are most likely to operate their own maintenance departments. About 58 per cent of the over 500-employee plants have departments compared with 33.7 per cent in the 100-499 group and 19.7 per cent in the 20-99 group.

Maker Most Popular—Plant respondents related that they prefer to purchase their instruments direct from the manufacturer. The purchase source breakdown is 72.5 per cent from the manufacturer directly, 32.9 per cent from the supply distributor, and 3.6 per cent get their instruments with the machinery purchased.

As with most plant equipment, the instrument makers will have to direct their sales pitch to plant presidents as well as to the production, engineering and purchasing departments.

● *STEEL has presented another in its series of market research studies designed for management in the metalworking industry. Watch for the next in a future issue.*



POTENTIAL SUPPLY OF IRON ORE FOR THE UNITED STATES

Annually in millions of long tons	1950-55	1955-65	1965-75
LAKE SUPERIOR high-grade ores	80	65	50
LAKE SUPERIOR low-grade taconites	5	15	20
LABRADOR-QUEBEC	10	20	40
VENEZUELA	4	25	40

Source: Based on the President's Materials Policy Commission Report

Domestic Iron Ore Outlook Brightens

Improving techniques for processing low-grade iron ores are strengthening the domestic iron ore outlook. General trend toward reliance on foreign ores still apparent

DOMESTIC iron ore producers will not be impoverished nor priced out of the market as quickly as predicted—at least not for 25 years yet, perhaps never.

That's the outlook of Director Clyde Williams and his associates at Battelle Institute, Columbus, O., based mainly on their evaluation of technological advances in steelmaking and processing of low-grade ores.

Improvements — While agreeing with prognostications pointing to a greater dependence on foreign ore sources, such as that of H. S. Harrison, financial vice president of Cleveland-Cliffs Iron Co., Cleveland, (Apr. 20, p. 70), and the President's Materials Policy Commission report (see chart above), Mr. Williams says: "As in the past, the iron and steel industry will lean heavily on technology to insure the receipt by the nation of greater quantities of iron and steel at low cost. Continually improving techniques for the processing of Lake Superior taconites and other low-grade iron ores are strengthening the domestic iron ore outlook."

Labrador-Quebec sources will be looked to next, since they would involve the least amount of geographical change in U.S. pig iron capacity; about 80 per cent of the blast furnace capacity of America lies in the Great Lakes area. Here again Mr. Williams, citing the PMPC report, optimistically views about 20 million long tons of ore coming into the U.S. in 1955-1965 and 40 million long tons in 1965-1975 from this source.

Coming Soon — More than 400 million tons of high-grade ore have been proved in the Knob Lake, Labrador-Quebec area. Production is expected to get underway at the beginning of the shipping season in 1955 when a railway to Seven Islands on the Gulf of St. Lawrence is completed.

Matching improved techniques for processing iron ore are improved iron and steelmaking facilities. "More emphasis is being placed on methods that will permit more extensive use of coking coals of lower quality than those used in the past," says Mr. Williams. "Conservation of steel is also much in the picture."

It all adds up to a much brighter outlook for domestic ore producers than predictions based on known reserves and past rates of consumption would indicate.

156 Get ODM Certificates

Certificates of necessity for accelerated tax amortization for 156 new or expanded facilities amounting to $181,936,440 were issued by the Office of Defense Moblization from July 16 through 29.

In the metalworking industry Bethlehem Steel Co. had three large certificates. One was for $7.5 million for cold-rolled sheet and strip expansion at its Lackawanna, N. Y., plant; one for $2.1 million for steel production at Bethlehem, Pa.; and the third was $4.8 million for pig iron facilities at the Sparrows Pt., Md., plant. International Nickel Co. Inc., Huntington, W. Va., also got a certificate for $1.2 million for its nickel alloy tubing and rod facilities. All of these certificates allowed 50 per cent amortization.

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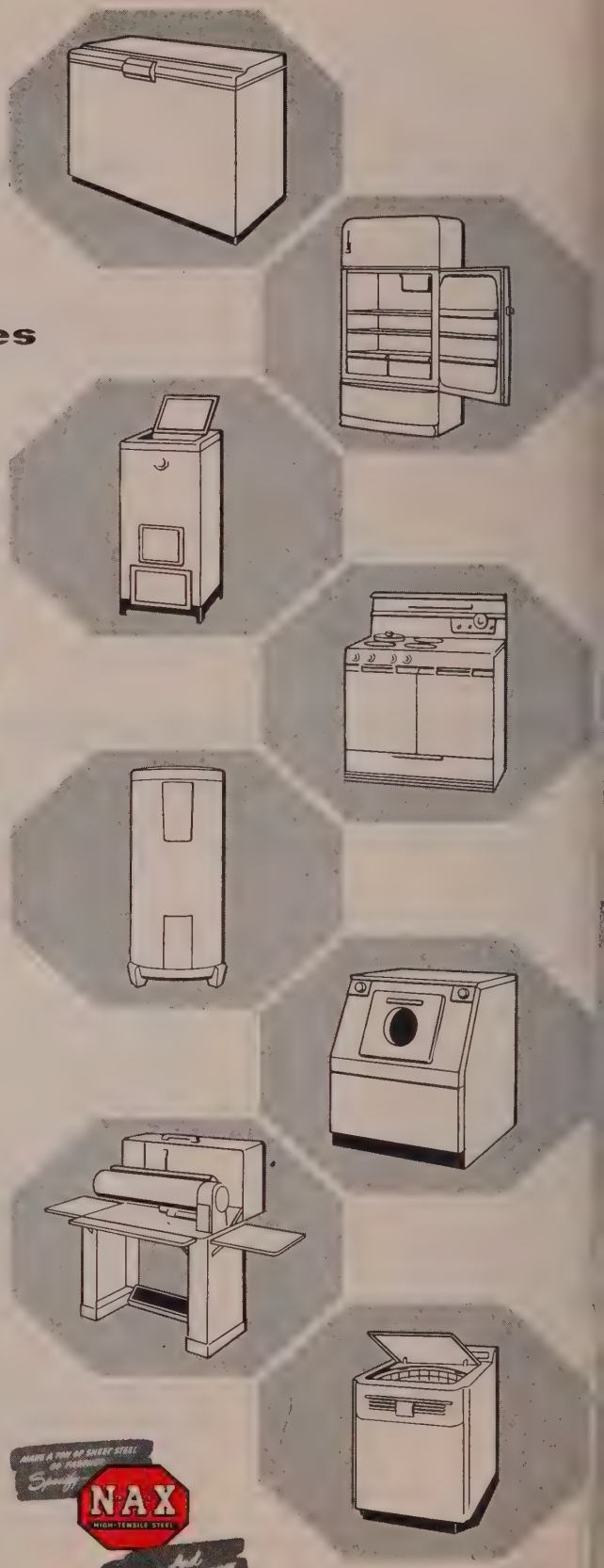
HIGH-TENSILE STEEL



N-A-X HIGH-TENSILE, having 50% greater strength than mild carbon steel, permits the use of thinner sections—resulting in lighter weight of products, yet with greater resistance to denting. It is a low-alloy steel—possessing much greater resistance to corrosion than mild carbon steel, with either painted or unpainted surfaces. Combined with this characteristic, it has high fatigue and toughness values and the abrasion resistance of a medium high carbon steel—resulting in longer life of products.

N-A-X HIGH-TENSILE, with its higher physical properties, can be readily formed into the most difficult stamped shapes, and its response to welding, by any method, is excellent. Due to its inherently fine grain and higher hardness, less surface preparation is required for either painted or plated parts.

Your product can be made lighter, resulting in shipping economies to consumer . . . to last longer . . . and in some cases be manufactured more economically, when made of N-A-X HIGH-TENSILE steel.

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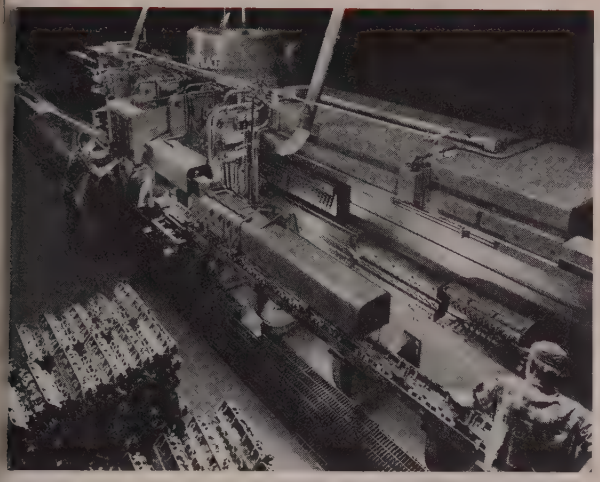
And "MAKE YOUR PRODUCT LAST LONGER"

KEEP YOUR SCRAP MOVING TO YOUR DEALER

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom



Neat as a Hospital—Where Buick V-8 Engines Are Born

In a new engine plant at Flint, Mich., described by its engineers as the most modern in the world, Buick is turning out 1200 V-8 engines a day. Left, a giant broach, 45 feet long and weighing more than 75 tons, automatically machines three sides of cylinder heads. Right, completed V-8 engines come off one of the twin 600-foot assembly lines

DETROIT

CHANCES are good you were a little disappointed to learn in this column last week that your 1954 chariot won't have a turbine engine and radar fog lights. Behind this annual rude awakening is an insidious plot of the automakers designed to keep hope springing eternal in the human breast.

Coyly released sketches of the "Car of the Future" do not accidentally lead the public to believe that the future is not far off. With such finesse do these lures perform their work that many individuals are more surprised to learn that the 1954 is a remake of the 1953 than they would be to learn experimental Sonic-500 was going into production.

Doubtful—This elixir turns the head of the car purchaser in such a way that accountants forget that tools must be amortized and production men forget that a design must be mass produced. Sales experts forget all they ever learned about keeping a market broad and designers forget that a car must carry passengers with heads, arms and legs. These men are literally in a "never-never" land so far as production is concerned.

Contributing also to this space cadet atmosphere is the calculated oversight of the automakers in failing to announce that you will have to live with the same basic body shell for about three years and with the same basic engine for about five years or more. For the automakers have cunningly concluded that they are in business to make a profit, and with that in mind here is basically the way your 1954 car was born.

Timetable—If your car has a new body, at least three years ago a group of top executives got together and agreed on a general shape. Not only must this shape be capable of passenger comfort, but it must look attractive with varying fenders and hoods for several years to come. In the case of the Big Three, the body should not only be adaptable on one car for some time, but should be usable on several different cars each varying over several years. Examples are Oldsmobile, Buick and Cadillac which share one body shell; Chevrolet and Pontiac which share another; Chrysler and DeSoto; Dodge and Plymouth; Ford, Mercury and Lincoln, etc.

This means that a stylist has his body shell fixed for some time to come and obviates the vista dome idea until the next body change at least. So when a new body comes out you can expect to see it around until the tooling and market are satiated. In the interim, the fenders will be changed once or twice and the trim will be changed annually. It should be pointed out that while some trim changes are admittedly for identification purposes, in many cases they are sincerely intended to modernize the appearance of the car in the line with changing trends of public taste. Changes like this require less lead time.

Engine Planning—In much the same way the basic engine is planned for many years of production. At the time an engine goes into production it has already been well established that there is plenty of potential to work on for the future. As a general rule of thumb, the horsepower of an engine can be hiked to twice what it delivers at the time of its introduction through comparatively modest modification. Adding more barrels to the carburetor, redesigning manifolds, increasing compression ratios or altering camshafts are relatively inexpensive methods of reaching an "improved design."

It certainly is not incorrect to

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say that these are improvements. To the extent that some are anticipated and planned improvements it is warranted to say that the automakers "hold back" something from the car purchaser. But if you take time to analyze the situation it is evident that the automakers are doing a very logical thing.

Because of Tooling—Tooling for a new body every year or a new engine every year would be very costly as can well be appreciated. For that reason a design that will permit amortization over a period of several years and lower the cost of the car to a competitive level is essential. Building cars to anticipate the demand trends of several years to come is one factor that dictates few departures from well-established trends. The basic engine, body and chassis for this reason must be conventional to assure stability with changes being made in relatively minor ways.

The cost of tooling for a new automobile is tremendous. In most cases an auto company does not begin to break even on a new design until well into the second year of its production. To make a profit the auto companies must give the American public a car that has a broad market at an attractive price and that is exactly what they set out to do. It is for that reason that the dream car, however much publicity it may receive, must remain a dream.

Driving the Le Mans

Very real indeed is Cadillac's dream car, the Le Mans. Three of these cars have been built at a cost of $1 million, making this one of the most expensive cars we have had the opportunity to drive. It also holds the distinction of being one of the most delightful.

Under the hood of the Le Mans prototype sports car dwells a highly chromed power plant which reportedly kicks out 250 hp when sufficiently urged. Incorporated in giving this power boost are two Cadillac carburetors and a nine to one compression ratio, with the engine otherwise strictly stock. The Hydramatic unit has been reworked as any might be to delay shifting until near peak rpm under full throttle. With the present setup the car drops into fourth gear at around 85 mph full bore though it can be shifted into fourth at 23 mph with minimum throttle.

Weight of the car is only 400 pounds less than a standard Cadillac convertible and the body is mounted on a chassis with standard Cadillac suspension and a wheelbase shortened to 115 inches. Instruments include a tachometer, four position gas gage, speedometer reading up to 130 mph and other standard instruments styled to the Le Mans interior and blindingly chromed.

Testing the car on a straightaway at the General Motors proving ground, the normal inclination is to floorboard the accelerator and observe whatever reaction may take place. The reaction is not long in coming. The Le Mans tachometer swings almost immediately to 4000 rpm and hangs there dropping back to 3500 rpm momentarily as the gears shift. The speedometer indicated 60 mph in less than 9 seconds from a standing start with the car hitting close to 100 mph at the end of a half mile. With only a 1¼ mile to play around in the best top speed one way was 108 mph.

The car is much too heavy to compete with anything in its sports car class though there is no fear that the idea has entered a General Motors head. Handling was very good with a standard steering ratio on the shortened wheelbase giving a very sensitive wheel control.

Suffice it to say that the Le Mans is a dream with plenty of life and its styling excellence well deserves incorporation in the 1954 Cadillac.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,390	542,559
June	713,206	542,479
July	756,543	226,134
August		322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
July 11	167,560	70,592
July 18	175,555	32,468
July 25	172,874	42,514
Aug. 1	168,267	22,181
Aug. 8	135,597	43,964
Aug. 15	150,000	36,890

Sources: Ward's Automotive Reports, *Estimated by STEEL

Packard in 1954

Space did not permit inclusion of the Packard in the forecast of 1954 models which appeared in this column last week. Essentially the 1954 Packard will feature trim changes which will trend more strongly to distinguish the Packard from the Clipper series. Mechanical changes will be coming in 1955 with expectation that a high-horsepower V-8 will make its debut in the Packard line.

Off the Envelope Back

The National Auto Dealer's Association reports that it will submit a statement to the House Ways & Means Committee on Aug. 12 protesting the "evil and discriminatory" aspects of the manufacturer's excise tax on new passenger cars, trucks, parts and accessories.

The present tax schedule (10 per cent on new cars) is scheduled for automatic reduction to 7 per cent on Apr. 1, 1954, but some want to see the tax remain at 10 per cent or even increased somewhat. The battle should be worth watching.

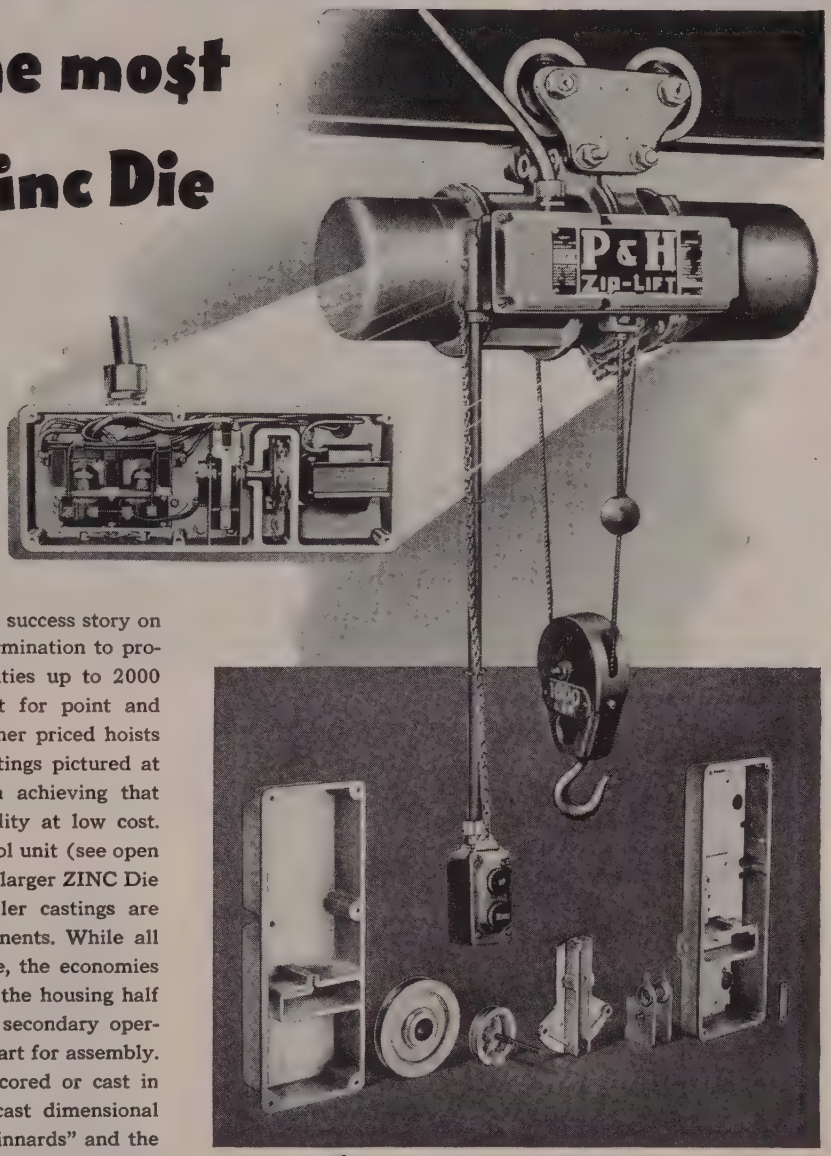
National sales of new Ford passenger cars were greater than any month since July, 1929, reports L. W. Smead, Ford Division sales manager of Ford Motor Co. Sales during the last half of 1953 are expected to closely approximate sales during 1950, the postwar record year.

Oldsmobile's sporty convertible, the Fiesta, is now reported in limited production by J. F. Wolfram, Oldsmobile general manager and vice president of General Motors. A wrap-around windshield and unique two-tone color pattern add to the distinctiveness of the car which is powered by a 170 hp version of the Rocket engine.

Orders for air conditioners in Chrysler, De Soto and Dodge cars still exceed increased production schedules, reports Chrysler Corp.

LIFT FROM HARNISCHFEGER

— get the mo$t for your Zinc Die Ca$ting Dollar!

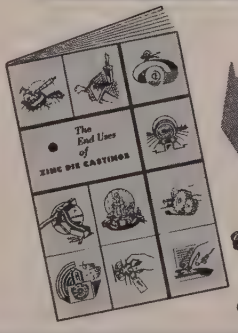


Take a page from Harnischfeger's success story on their Zip-Lift — the result of a determination to produce a small electric hoist (capacities up to 2000 lbs.) which would compare — point for point and dollar for dollar — with existing higher priced hoists on the market. The ZINC Die Castings pictured at the right played no small part in achieving that elusive design objective — high quality at low cost.

The housing for the Zip-Lift control unit (see open view above) is formed with the two larger ZINC Die Castings illustrated. The five smaller castings are pulleys and other operating components. While all of these parts are complex in shape, the economies of die casting are most apparent in the housing half at the extreme right. No elaborate secondary operations are required to prepare this part for assembly. All holes, recesses and bosses are cored or cast in the die casting operation. The as-cast dimensional accuracy insures perfect fit of the "innards" and the inherent strength of ZINC Die Castings safeguards the unit from abuses in service.

For many other examples of die casting economies, ask us — or any commercial die casting company — for a copy of our brand new booklet "The End Uses of ZINC Die Castings".

The New Jersey Zinc Company
160 Front St., New York 38, N. Y.



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FOR DIE CASTING ALLOYS

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For the long haul... Autocar relies on RB&W bolts

Famous truck builder rates them best for ease of assembly and accessibility

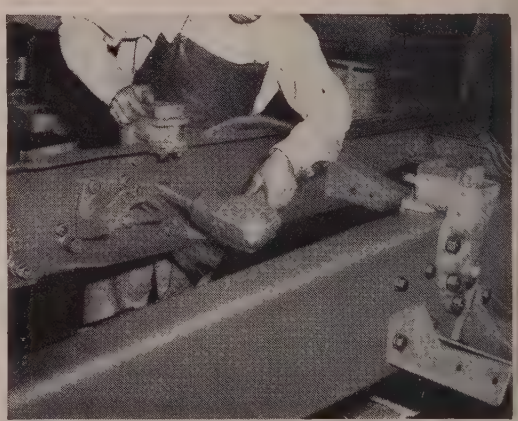
It's been a long time since the Autocar people switched from riveted to bolt-and-nut construction. Here's how it happened:

Two Autocar engineers took off on a coast-to-coast run to shake the bugs out of a new test model. Things went well until a riveted spring bracket broke. It took an entire day just to chisel through the rivets because it was hard to get at the bracket.

From that day on, it was *accessible* bolt-and-nut construction exclusively for all Autocar trucks. And Autocar standardized on RB&W bolts. One dividend from using these rugged bolts is that Autocar can specify higher-strength material than is practical for riveting. Furthermore, tests on structures like bridges show that rivets frequently loosen. This doesn't happen to bolts on Autocar frames.

Where you want to join structural members firmly together so they'll *stay* together for good, high-strength bolting is often your best bet.

As the leading manufacturer of all kinds of fasteners, we're in the unusual position of always being able to recommend and supply the right ones for all your needs. Write to RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY, Port Chester, N. Y.



FASTER FASTENING is achieved in the Autocar plant at Ardmore, Pa., by using air tools like the one shown here to run up RB&W nuts on RB&W bolts on an Autocar truck frame. In addition to making tight, accessible joints, bolting effects substantial assembly savings.

3.1

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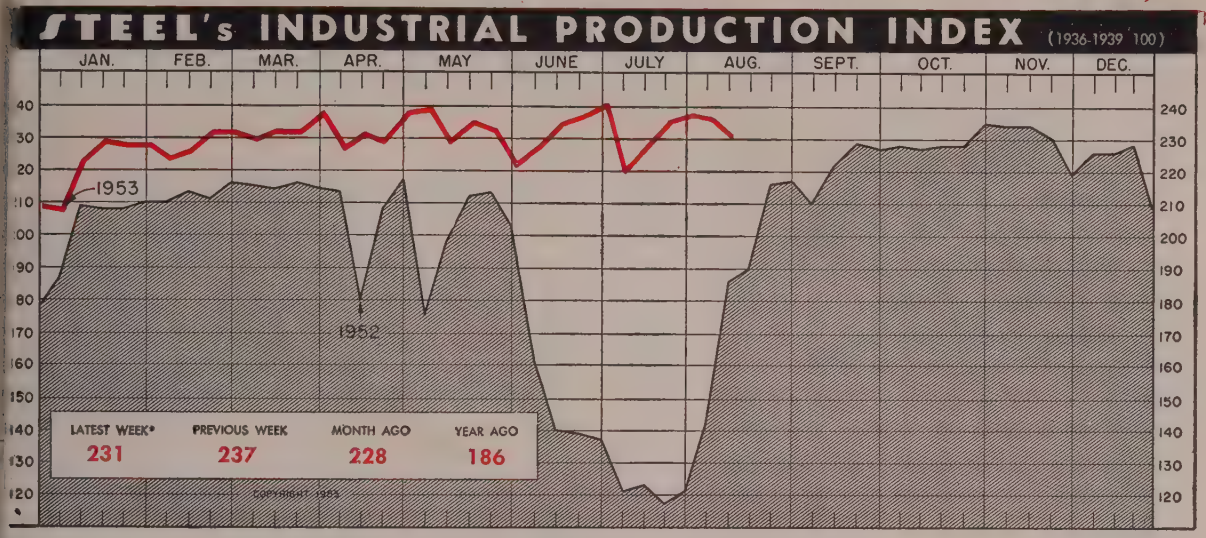


*Week ended Aug. 8

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Wards' Reports) 20%.

Automobile output drags down industrial production. Next year's sales hopes are pinned to styling. Output of electric energy will continue to set more records

WHILE automobile output dropped sizably during the latest week, electric output and railroad freight car loadings continued to increase. These developments are reflected in STEEL's industrial production index, which fell off 6 percentage points from the previous week to register 231 per cent of the 1936-1939 average. Nevertheless, the present level of industrial production is 45 points higher than in the same week last year when output staged its greatest weekly recovery from the steel strike.

High Style . . .

For the future, automobile makers in the low-priced field will unanimously heed the fast growing elegance of John Doe's taste, manifested during the past three years, by lavish styling of their 1954 models. Studebaker's success in offering a single body style in three selections set the trend. So far this year its standard series has garnered only 10 per cent of its sales, while the deluxe model has taken 30 per cent and the super deluxe line has cashed in on 60 per cent. Moreover, the prime example of splendid appointments, the Chevrolet Bel Air, has captured 30 per cent of Chevrolet's 1953 sales.

Meanwhile, new car sales in July held up well. The monthly volume exceeded 500,000 units and may have been close to the year's highest point, reached in May. Manufacturers in the low-priced field sparked the advance over June, and sales of one volume producer were up 54 per cent over June.

Truck makers, during August, expect to duplicate their July production of 110,692 units, which was exceeded only by March and April. The pickup in truck output and sales recently has increased the competition and as a result the Ford Motor Co. has reduced the list price on 28 of its 190 truck models by amounts ranging from $12—$36.

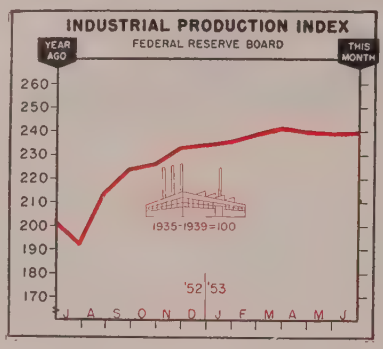
The Chrysler shutdown during the latest week almost entirely caused the 16 per cent drop in U. S. vehicle output. During that period, the week of Aug. 8, production of cars and trucks by U. S. and Canadian plants totaled 135,597 units, according to *Ward's Automotive Reports*. With Ford and GM still pushing production, output for the coming weeks shouldn't change appreciably from what it dropped to during the latest week.

Untarnished Demand . . .

With some automobile concerns taking but not using all of their present steel deliveries, steel production during the latest week is approximately the same as the preceding week. During the week ended Aug. 15, furnaces of the steel industry poured 2,184,000 net tons of steel for ingots and castings, the American Iron & Steel Institute says. Furthermore, if bookings of other types of steel hold up as well as the present demand for stainless steel and clad metal, steel output will not decline as much as usual in the fourth quarter.

Abundant Energy . . .

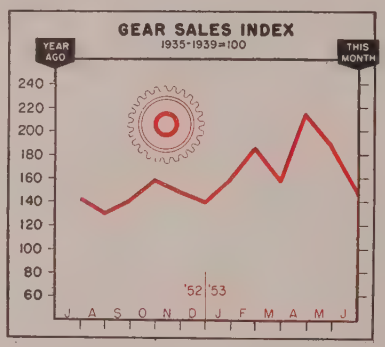
The demand for electric power created another output record and will continue to register new records this fall. During the week ended Aug. 1, a total of 8,511,622,000 kilowatt-hours of electricity were distributed, the Edison Electric Institute reports. This was the second consecutive week that a new peak had been reached and the third time so far this year. To meet this rapidly growing demand, electric utilities added 2,838,126 kilowatts to their generating capacity in the first half of the year. Total name-



Industrial Production Index
1935-1939=100

	Total Production 1953	1952	Iron, Steel 1953	1952	Non-ferrous 1953	1952
Jan.	236	220	287	261	249	215
Feb.	240	222	290	261	259	217
Mar.	243	220	297	262	261	218
Apr.	241	216	292	245	264	218
May	240	211	291	245	263	220
June	241	203	288	142	263	212
July	...	193	...	141	...	201
Aug.	...	215	...	241	...	212
Sept.	...	225	...	267	...	221
Oct.	...	227	...	276	...	228
Nov.	...	234	...	283	...	240
Dec.	...	235	...	287	...	245
Avg.	...	218	...	243	...	220

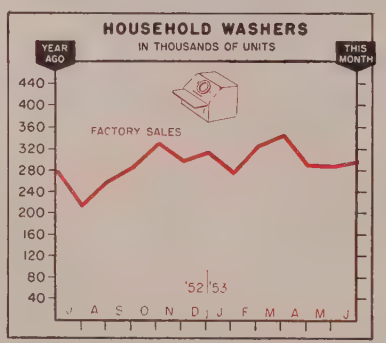
Federal Reserve Board



Gear Sales Index
(1947-1949=100)

	1953	1952	1951
Jan.	161.4	670.6*	764.6*
Feb.	188.1	539.5*	809.1*
Mar.	158.9	517.1*	830.7*
Apr.	217.1	478.7*	742.5*
May	189.8	425.9*	667.1*
June	146.5	452.3*	800.9*
July	....	145.3	589.1*
Aug.	....	132.3	564.2*
Sept.	....	143.4	630.0*
Oct.	....	160.8	703.4*
Nov.	....	150.9	530.0*
Dec.	....	140.9	716.5*

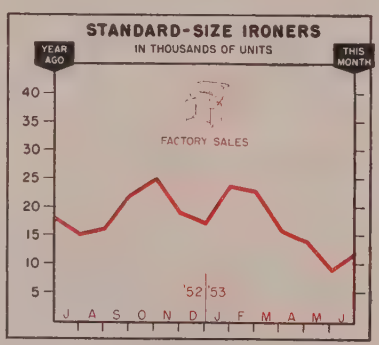
*(1935-1939=100)
American Gear Mfrs. Assn.



Household Washers
Sales Billed—Units

	1953	1952	1951
Jan.	277,309	213,998	321,092
Feb.	326,604	255,864	341,328
Mar.	345,989	248,431	368,455
Apr.	288,474	217,211	292,193
May	286,515	213,668	253,942
June	304,086	274,457	253,119
July	.....	207,593	139,799
Aug.	.....	254,537	239,081
Sept.	.....	283,732	313,756
Oct.	.....	327,814	297,210
Nov.	.....	293,079	262,484
Dec.	.....	310,661	218,664
Totals	.....	3,101,045	3,301,123

American Home Laundry Mfrs. Assn.



Standard-Size Ironers
Factory Sales—Units

	1953	1952	1951
Jan.	24,395	15,636	24,600
Feb.	22,586	17,630	32,400
Mar.	16,066	13,913	34,700
Apr.	14,080	8,938	23,700
May	9,323	12,852	24,200
June	12,529	17,654	24,500
July	.....	15,025	11,100
Aug.	.....	16,477	17,200
Sept.	.....	22,492	18,300
Oct.	.....	25,204	29,800
Nov.	.....	19,724	20,500
Dec.	.....	16,798	16,900
Total	.....	202,143	277,700

American Home Laundry Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....Aug. 10
Durable Goods ....Aug. 10
Employ. Metalwk..Aug. 10
Employ., Steel ....June 1
Fab. Struc. Steel .Aug. 10
Foundry Equip. ...July 27
Freight Cars .....July 27
Furnaces, Indus. ..July 13
Gray Iron Castings.July 20
Machine Tools ....Aug. 3
Malleable Castings.July 20
Prices, Consumer ..June 22
Prices, Wholesale ..July 27
Pumps .....July 27
Radio, TV .....May 25
Ranges, Elec. ....Aug. 3
Ranges, Gas .....May 18
Refrigerators .....Aug. 3
Steel Castings .....July 20
Steel Forgings .....July 20
Steel Shipments ...June 22
Vacuum Cleaners..Aug. 3
Wages, Metalwk. ..July 6
Water Heaters .....July 29

plate capacity as of June 30, was 85,064,570 kilowatts. Moreover, for the first time the combined utility and industrial generating capacity in the U. S. exceeded 100 million kilowatts, the Federal Trade Commission says.

Supporting Role . . .

Distribution of electric power continues to run about 15 per cent above last year. The most important point, however, is that sales to ultimate customers are increasing considerably faster than the number of customers. For example, sales in May were 13.9 per cent above a year ago and the number of customers was only 3 per cent higher during the same period. Popularity of the air conditioner has played an important role in the rising sales. Moreover, demand for room air conditioners is still in its infancy. The desire for central-type systems is even younger, yet one manufacturer reports that orders for these more expensive units have exceeded production. Furthermore Chrysler Corp. officials say their automobile air conditioning units have been so well received that production schedules have been increased.

Appliance Market . . .

Sales of other appliances have not fared nearly as well. With consumer demand losing momentum almost every month, sales of refrigerators and ranges are down considerably from the March peak. The greater-than-seasonal slump in the appliance market has resulted in strong competition, which has forced prices to lower levels even though the cost of materials and labor has increased. Recently, the Erie, Pa., plant of the General Electric Co. extended a scheduled two-week vacation for 5000 employees another week, due to a shortage of work.

Slower Speed . . .

Another industry, where production is adjusting to a decline in orders, is the railroad diesel engine business. One manufacturer says that it is turning out only three locomotives a day now, compared with four units prior to July 20.

BAROMETERS OF BUSINESS

	LATEST PERIOD	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	96.5	96.5	89.0
Electric Power Distributed (million kwhr)	8,530[1]	8,512	7,495
Bituminous Coal Output (daily av.—1000 tons)	1,535	1,527	1,384
Petroleum Production (daily av.—1000 bbl)	6,550[1]	6,557	6,266
Construction Volume (ENR—millions)	$326.5	$297.5	$253.1
Automobile, Truck Output (Ward's—units)	135,597	168,267	43,964
TRADE			
Freight Car Loadings (unit—1000 cars)	801[1]	794	782
Business Failures (Dun & Bradstreet, number)	195	182	123
Currency in Circulation (millions)[3]	$30,139	$30,044	$29,041
Dept. Store Sales (changes from year ago)[3]	−1%	+5%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$16,533	$16,524	$16,317
Federal Gross Debt (billions)	$272.7	$272.6	$262.9
Bond Volume, NYSE (millions)	$12.2	$11.4	$15.9
Stocks Sales, NYSE (thousands of shares)	5,390	5,800	5,506
Loans and Investments (billions)[4]	$79.6	$80.0	$76.1
United States Gov't. Obligations Held (billions)[4]	$32.7	$32.9	$33.3
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	189.38	189.38	181.40
STEEL's Nonferrous Metal Price Index[6]	206.0	207.3	222.1
All Commodities[7]	110.3	110.5	109.4
All Commodities Other Than Farm and Foods[7]	114.5	114.5	113.8

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

On the other hand an increase in the parts business is propping up operations. Moreover, the president of the American Locomotive Co., looking into the future, foresees a tremendous market of more than 10,000 units in the U. S.

Welcome Income . . .

In that connection, the $100 million increase in net income of class 1 railroads during the first half, as compared with the corresponding period in 1952, lends active support. And even though the rate increase last year for the railroads accounts for the lion's share of the expanded earnings, the increased income only brings them up closer to that of other industries. Better management and more business also played their part in the earnings.

Construction Costs Rise . . .

On the increase also are costs in the construction industry. The third and largest wave of new construction agreements caused construction costs to reach new highs for August. Costs are 1.3 per cent higher than in July, according to the *Engineering News-Record* construction cost index, which reached 612 per cent of the 1913 average. In the next four months small increases in labor rates are expected, but these will be offset by some softness in lumber prices.

Tighter Purse Strings . . .

The good rate of activity for most businesses during the second quarter is reflected in the gross national product, which rose from an annual rate of $362 billion in the first quarter to $372 billion in the second quarter. It is noteworthy that personal consumption expenditures rose, although inventories also absorbed a substantial portion of the national output. Personal consumption expenditures rose $2.5 billion. Even so if this rate of consumption were projected on an annual basis it would amount to only 61.9 per cent of output, compared with an average of 69 per cent of output in 1946-1949.

Trends Fore and Aft . . .

New orders for foundry equipment in June registered 446.8 per cent of the 1937-1939 average, 152.4 percentage points higher than in May, the Foundry Equipment Manufacturers Association says . . . May shipments of nonferrous castings totaled 192 million pounds, 21 million pounds less than April shipments, the Commerce department says.

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Men of Industry

THEODORE F. ESERKALN
. . . chief engineer, Kempsmith Machine

WILLIAM J. TELL
. . . appointment at Cadillac

I. M. J. KAPLAN
. . . Copperweld Steel v. p.

Kempsmith Machine Co., Milwaukee, appointed **Theodore F. Eserkaln** chief engineer. Long associated with design of milling machines, he was for many years with Kearney & Trecker Corp. More recently he served as director of engineering at George Gorton Machine Co.

White Cap Co., Chicago, elected **George P. White**, vice president-sales, to the new post of chairman and **Philip White** as president to succeed **William P. White**, retired to a consulting position but remaining as a member of the executive committee. **Robert P. White** becomes secretary.

Henry W. Buerger fills the new post of purchasing agent of **Tempel Mfg. Co.**, Chicago, and **Leslie C. Roewer** was made order control supervisor. Mr. Buerger was formerly director of purchases for Eicor Inc., and Mr. Roewer was with the Chicago office of Dun & Bradstreet.

C. D. Hoover is the newly appointed eastern sales manager for **Breuer Electric Mfg. Co.** He will cover New England, upper New York and Pennsylvania outside of Philadelphia.

In the engineering division of **Cadillac Motor Car Division**, General Motors Corp., Detroit, **William J. Tell** was promoted to the newly created post of staff engineer in charge of Cadillac's future body and sheet metal styling. He is succeeded by **Daniel M. Adams** as staff engineer, body and sheet metal design. **Clarence E. Morphew** becomes assistant staff engineer in charge of sheet metal.

Dr. Clyde McKinley will be director of research for **Air Products Inc.**, Allentown, Pa., effective Sept. 1. For the last ten years he has been with the research staff of General Aniline & Film Corp.

William C. Vanbebber was appointed sales engineer for **Baldwin-Lima-Hamilton Corp.'s** testing equipment in Los Angeles and surrounding territory.

Firth Sterling Inc., Pittsburgh, promoted **Raymond J. Zale** to assistant to the sales manager, steel division, responsible for sales and promotion of tool steel products.

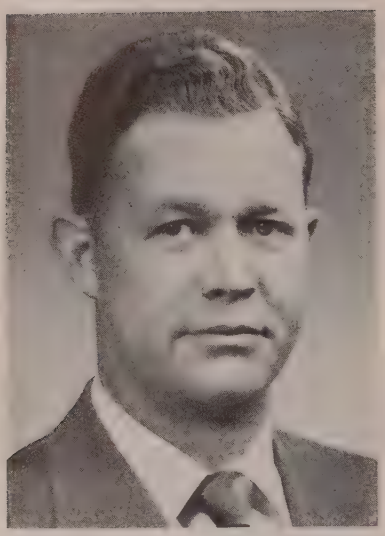
Jackson & Church Co., Saginaw, Mich., named **Eldon B. Hunt**, regional sales manager, plastics division. He will cover Illinois, Indiana and Michigan, with offices in Owosso, Mich.

I. M. J. Kaplan was appointed vice president of **Copperweld Steel Co.** with headquarters at Pittsburgh. He was formerly manager of sales, special products, in the wire and cable division at Glassport, Pa.

George H. Roderick, currently vice president-manufacturing, **American Seating Co.**, Grand Rapids, Mich., was named vice president for operations. In addition to directing the sale and promotion of company defense products, he will be in charge of purchasing, production engineering, manufacturing and traffic operations.

New officers of **United States Steel Homes Inc.**, housing subsidiary of U. S. Steel Corp., New York, are: **Harry R. Black**, former executive assistant to president, elected vice president and treasurer succeeding **John A. Gadient**, retired; **Joseph L. Buckler**, elected assistant comptroller; and **John C. Bird**, elected assistant secretary.

Marc Resek, formerly vice president-engineering, has become vice president in charge of all research at **Perfection Stove Co.**, Cleveland. **W. H. Haag** is now vice president of manufacturing, engineering and purchasing, and **W. M. Day**



RICHARD H. BERGE

CHARLES D. BARNES

. . . positions at Eaton Mfg.

is in charge of the engineering department, reporting to Mr. Haag.

Eaton Mfg. Co. promoted **Richard H. Berge** to plant manager of its pump division at Marshall, Mich., and **Charles D. Barnes** to plant purchasing agent at its newly established Marion, O., forge division.

Kennametal Inc. appointed **R. P. Schwing** and **E. R. Willerton** representatives, and **S. H. Jones** and **W. H. Hiltebeitel** service engineers in the middle Atlantic district, headquarters Philadelphia. Added service engineers are **Louis Lekich**, Detroit, and **R. W. Phelps**, Milwaukee.

American Steel & Wire Division, Cleveland, U. S. Steel Corp., combined its spring products sales division with its manufacturers products sales division and named **Charles W. Meyers** manager. **Edmond J. Walsh** will be assistant manager of the division in charge of rods, wire and cold-rolled strip, and **Robert D. Knight** will be assistant manager in charge of springs.

Basic Refractories Inc. has established new sales districts to serve the eastern, central and midwestern steel markets. **C. R. Heilig** was named sales manager, central district, with headquarters at the company's general offices in Cleveland. **G. W. Edwards** was made assistant manager. **J. D. Hysong** heads the midwestern district with offices at Gary, Ind., and St. Louis. **D. B. Baxter** is manager of the eastern district, handled from offices in Pittsburgh and Philadelphia.

L. S. Cawrse was elected president of **Consolidated Iron-Steel Mfg. Co.**, Cleveland. Elected a director of the company in 1945, he has served as vice president since 1950. He succeeds **Kennedy Davidson** who will continue to serve as a member of the board of directors and in a consulting capacity. **Roy J. Foster** will succeed Mr. Davidson as treasurer of Consolidated. He has been secretary and a member of the board as well as assistant treasurer, and is also manager of warehouse sales of Republic Structural Iron Works Division of the company.

Robert L. Holloway was named chief engineer of **American Machine & Foundry Co.'s** Buffalo plant to succeed **Russell G. Zuefle** who has resigned. Formerly manager of the special projects and development section of the Buffalo engineering department, Mr. Holloway has been with the company since 1946.

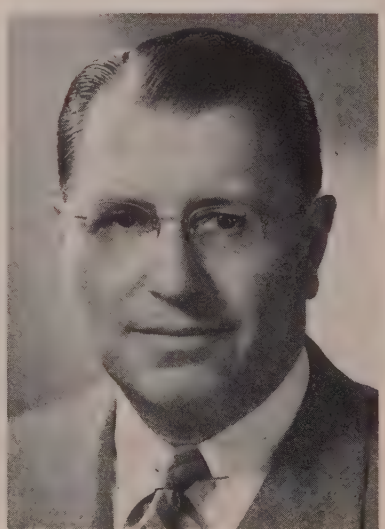
Hanson-Van Winkle-Munning Co., Matawan, N. J., appointed **John J. O'Day** as sales representative for the Detroit area.

Dr. Aaron Wexler was appointed manager of the magnetics and solid state physics department of **Westinghouse Research Laboratories**, Westinghouse Electric Corp. Pittsburgh.

Arthur A. Gustafson was appointed district sales representative for Minnesota and Iowa by **American Silver Co.** His office is located at 2580 University Ave., St. Paul.

G. W. Ballantine was appointed to the newly created position of manager, coated abrasives department, **Armour & Co.'s** Alliance, O. division.

H. R. Wilson, a sales representative in the Indianapolis district office of **Allis-Chalmers Mfg. Co.'s** general machinery division sinc



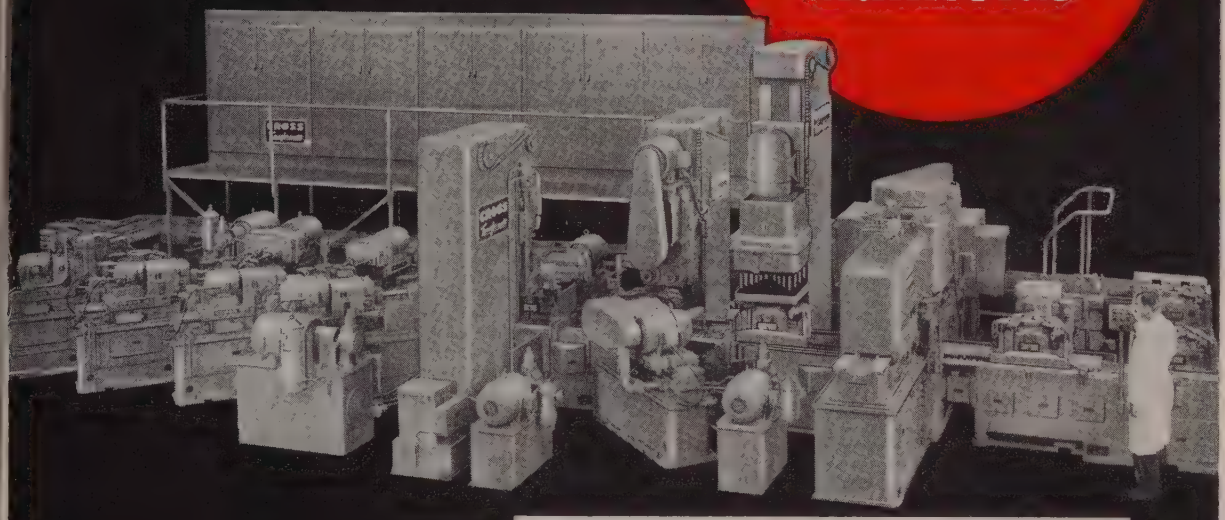
L. S. CAWRSE

ROY J. FOSTER

. . . promotions at Consolidated Iron-Steel Mfg.

Another Transfer-matic by Cross

Completely Machines Exhaust Manifolds



★ Machines right and left exhaust manifolds completely — 42 milling, drilling, boring, chamfering, and tapping operations.

★ 230 pieces (115 right and 115 left) per hour at 100% efficiency.

★ Ten stations—one loading, one unloading, three milling, three drilling, one boring, one tapping.

★ Palletized work holding fixtures with power wrenches for automatic operation.

★ Cross-Drive for milling cutters.

★ Other features: Built-in chip conveyor and automatic removal of chips from fixtures after each cycle, pre-set tools, J.I.C. standard construction, automatic lubrication, hardened and ground ways.

Established 1898

THE **CROSS** CO.

DETROIT 7, MICHIGAN

Special MACHINE TOOLS

RALPH D. PARKER
. . . heads Canadian Nickel Co. Ltd.

LESLIE L. HOTSENPILLER
. . . a National Radiator v. p.

F. B. O'MARA
. . a National Carbon sales mgr.

1948, was named manager of the company's Rockford, Ill., branch office.

Ralph D. Parker was elected president, **Canadian Nickel Co. Ltd.**, Copper Cliff, Ont. He has been vice president and a director of this exploratory subsidiary of International Nickel Co. Inc. since May, 1952.

F. Milford Taylor was elected a director of **Bohn Aluminum & Brass Corp.**, Detroit. He is treasurer of the corporation.

H. M. McDaniel joined the sales staff of **Republic Steel Corp.**, Cleveland, to supervise the sale of plastic pipe and tubing.

Cecil A. Potter, president of Machinery & Engineering Corp., was appointed general manager of **B. F. Perkins & Son Inc.**, Holyoke, Mass.

Leslie L. Hotsenpiller was elected vice president for manufacturing, **National Radiator Co.**, Johnstown, Pa. He has been director of manufacturing since 1952. He joined National Radiator last year after serving as assistant factory manager for North American Aviation Corp.

Aluminum Co. of America, Pittsburgh, named **Frank D. Goll** and **Milton G. Roth** assistant managers of sheet and plate sales.

At **Van Norman Corp.**, Springfield, Mass., **Roger L. Pyne,** vice president in charge of activities in the machine tool division, will now concentrate on the engineering phases of that field. **Herbert L. Freer,** production planning manager, was named general sales manager, machine tool division. He is succeeded by **Edward C. Hellyer.**

F. B. O'Mara was appointed manager, metallurgical carbon sales, by **National Carbon Co.**, a division of Union Carbide & Carbon Corp., New York.

L. J. Sorensen was named executive vice president, **Deepfreeze Appliance Division,** Motor Products Corp., Chicago. He is succeeded as vice president-general manager by **F. F. Duggan,** who was formerly general sales manager of major appliances for Crosley Division, Avco Mfg. Corp. Mr. Duggan returns to Deepfreeze after an absence of three years.

Miss Margaret Heath was appointed district manager for the southern district office of **Luria Steel & Trading Co.** at Birmingham. She succeeds **George Bangs,** resigned.

Robert W. Baird Jr. was made assistant to the president, **J. I. Case Co.**, Racine, Wis.

OBITUARIES...

William E. Clow Jr., 68, chairman of **James B. Clow & Sons,** Chicago, died Aug. 5.

William A. Dudley, 57, equipment research engineer for **Western Union Telegraph Co.**, New York, died Aug. 7. He took a leading part in developing automatic telegraph systems.

Albert L. Kimble, 82, former inspector at **Clemson Bros. Inc.**, Middletown, N. Y., died on Aug. 6.

Norman J. Urquhart, 62, chief development engineer, **Steel Processing Co.**, Pittsburgh, died July 27.

John H. Hall, 72, steel foundry consultant and member of the advisory staff of *Foundry,* died Aug. 4.

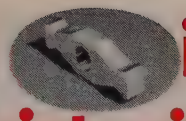
John M. Dempsey, 60, assistant to the general manager of the **Bethlehem Steel Co.** shipyards, New York, died Aug. 6.

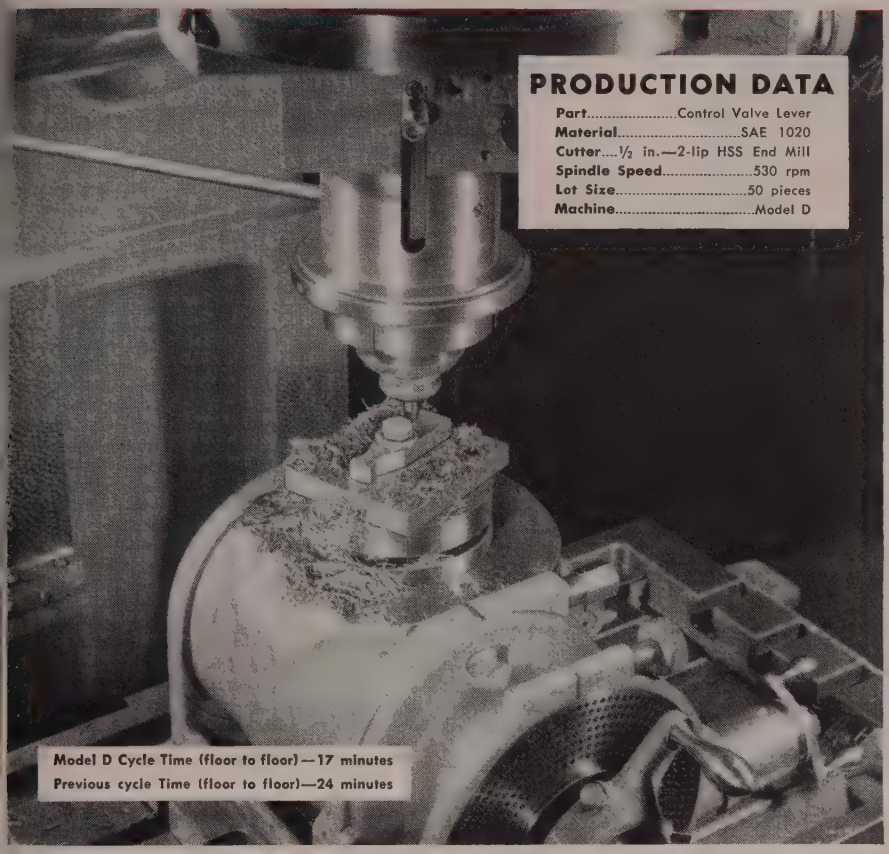
Norman R. Entrekin, 79, former director of **Lukens Steel Co.**, Coatesville, Pa., died Aug. 4.

John J. Hauerwas, 64, industrial planning engineer for **A. O. Smith Corp.**, Milwaukee, died Aug. 5.

Thomas C. Birtley, 65, production manager, **Pressure Castings Inc.**, Euclid, O., died Aug. 5.

Paul F. Koch, 73, founder and president, **Chicago Die Casting Mfg. Co.**, Chicago, died July 31.

This part  is finish milled direct from the blueprint, with a single setup, in 17 min.!



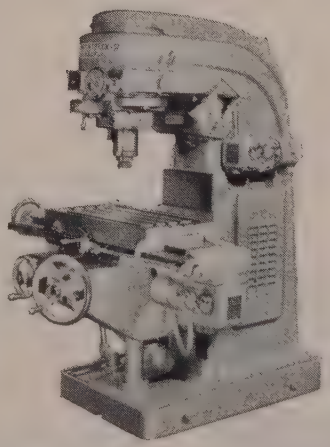
Kearney & Trecker Model 2D Rotary Head Milling Machine saves six hours on 50 piece run

HERE is another example of the tremendous time and tooling savings possible with the rotary head milling method.

This manufacturer used to complete a control lever every 24 minutes. Now the same work is completed in only 17 minutes . . . and no multiple setups or expensive form cutters are necessary. The blueprint is the only guide the operator needs — the machine's precise mechanical control of the cutter's angular and radial movements does the rest.

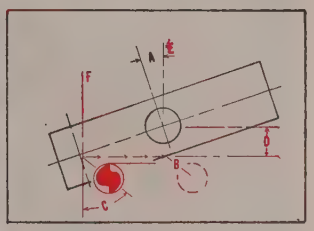
Here's the Rotary Head Milling Machine Production Idea Booklet. It contains several examples of how this method has been found exceptionally efficient in solving production, die, forging and metal pattern milling problems. It's yours for the asking.

Address requests to Kearney & Trecker Corp., 6784 W. National Avenue • Milwaukee 14, Wisconsin

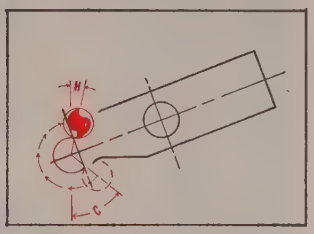


THIS IS THE MACHINE that will handle your light production milling faster, easier and at tremendous savings over any other method. If you have any production problems in plastic molds, die-casting, forging and stamping dies, or selected production milling operations — investigate the Model 2D.

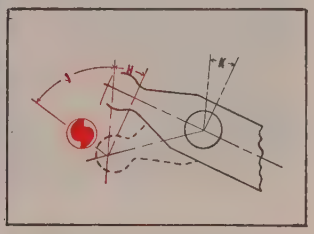
KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS



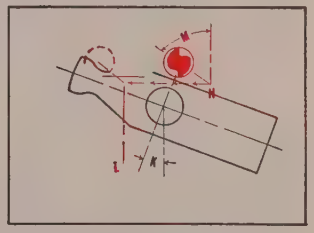
1. MILL 20° ANGLE. Index piece to angle (A), offset spindle slide to radius (B), set rotary head to angle (C), saddle to (D). Feed table (E) to (F).



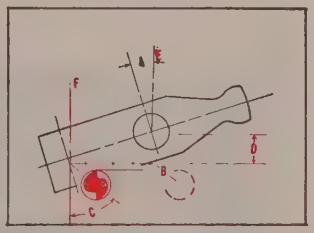
2. MILL .642/.645 DIAMETER. Rotate head angle (C) to angle (H).



3. MILL 1⅝ IN. RADIUS. Rotate head fromangle (H) to angle (J), index dividing head from angle (A) (Oper. 1) to angle (K).



4. MILL 20° ANGLE. With piece at (K), move center of head to (L); rotate head to (M). Feed table (L) to (N).



5. MILL SAME FORM ON OPPOSITE END. Repeat operations 1 through 4 by indexing the workpiece to angle (A-Oper. 1).

Machine tool idea pool

In designing machine tools, as in planning countless other products, OSTUCO Steel Tubing provides an endless pool of practical ideas because of its *unlimited adaptability*. Collets, chucks, spacers, spindles, bearings, shafts, ferrules, and handles are but a few of the applications.

By varying the radius of a bend, the length of a taper, the dimension of an upset, etc., an old design can be improved or a new one created. By combining such operations, a part can be made to serve several functions, thus simplifying design. Parts may even be fabricated or forged beyond recognition as a tube section.

Whether you design machine tools or products of a distinctly different nature, you will want to investigate the many quality-improving, cost-reducing features of OSTUCO Tubing. We cannot always promise early delivery estimates on new civilian orders, because of military demands, but it will pay you to consult our experienced engineers about OSTUCO Tubing when redesigning your products to meet future competition.

Write for informative free booklet, "Fabricating and Forging Steel Tubing," showing the many basic fabricating and forging operations OSTUCO can perform.

From Your Blueprint . . . to Your Product
OSTUCO TUBING
Tapering • Swaging • Flanging • Bending
Upsetting • Expanding • Reducing • Beading
End closing • Spinning • Drilling • Slotting
Notching • Flattening • Shaping • Trimming
Threading • Angle Cutting • And Many Others

OHIO SEAMLESS TUBE DIVISION
of Copperweld Steel Company

Manufacturers and Fabricators of Seamless and Electric Welded Steel Tubing

Plant and General Offices: SHELBY, OHIO

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SALES OFFICES: Birmingham, P. O. Box 2021 • Chicago, Civic Opera Bldg., 20 N. Wacker Dr. Cleveland, 1328 Citizens Bldg. • Dayton, 511 Salem Ave. • Detroit, 520 W. Eight Mile Road, Ferndale • Houston, P. O. Box 17007 • Los Angeles, Suite 300-170 So. Beverly Drive, Beverly Hills • Moline, 617 15th St. • New York, 70 East 45th St. • Philadelphia, 2004 Packard Bldg., 15th & Chestnut • Pittsburgh, 1206 Pinewood Drive • St. Louis, 1230 North Main St. • Seattle, 3104 Smith Tower • Syracuse, 2350 Bellevue Ave. • Tulsa, 245 Kennedy Bldg. • Wichita, 622 E. Third St. • *Canadian Representative:* Railway & Power Corp., Ltd.

Dollin Corp. Expands

Addition to diecasting plant will boost capacity 60 to 75 per cent and increase efficiency

DOLLIN CORP., Irvington, N. J., producer of zinc and aluminum diecastings, is building an addition to its plant that will provide a 60 to 75 per cent increase in total production capacity.

This project is expected to be completed by September and will provide an increase of about 100 per cent in the plant's floor space. Relocation and expansion of departments will result in greater efficiency as well as much greater capacity. Main offices will be moved to the second floor of the new building. Present office space will be used for expanding the engineering department and the tool and die shop.

New Equipment—Expansion of the production departments will be extensive. Heavy investments already have been made in additional machinery and equipment for each of three departments, devoted to production of aluminum diecastings, large zinc diecastings, and small zinc diecastings, respectively.

Diecasting machines added in these departments will be of the type currently being used. Many of them were designed by Dollin engineers. These include large, cold-chamber type, high-pressure machines for aluminum castings; large-plunger type machines for large zinc castings; and special high-speed automatic machines for small zinc castings (in the approximate range of 3 per pound to 1000 per pound).

Armco Builds Office Addition

Armco Steel Corp., Middletown, O., is constructing a $500,000 addition to its general office building. The new wing is scheduled to be ready for occupancy around Apr. 1.

Testing Firm Combines Units

United States Testing Co. Inc., Hoboken, N. J., consolidated its Boston Wool & Textile Laboratory and Boston Research Division (formerly the Esselen Research Division). The Boston branch is located at 288 "A" St. R. T. McAndrew is manager. The research services are particularly directed to product development and improvement, finding substitutes for expensive or critical materials, production trouble shooting, process simplification and waste utilization.

Plans Titanium Dioxide Plant

American Cyanamid Co.'s Calco Chemical Division, Bound Brook, N. J., will build a $14 million titanium dioxide plant on the outskirts of Savannah, Ga. Construction of the plant will begin the last quarter of this year and is expected to be completed early in 1955. The plant will be built to permit doubling of output at some future date. The division operates plants for production of titanium dioxide in Piney River, Va., and Gloucester City, N. J.

Westinghouse Enlarges Plant

Westinghouse Electric Corp., Pittsburgh, is expanding its Transformer Division plant at Sharon, Pa. Part of the additional space will be used as a steel fabrication shop in building tanks for large power transformers. Additions will be made to eight other buildings.

Sandvik Opens Warehouse

Sandvik Steel Inc., New York, supplier of Swedish cold-rolled specialty steels, established a warehouse and sales office at 3609 E. Olympic Blvd., Los Angeles, under the supervision of E. G. Sammann.

Scovill Names Representative

Scovill Mfg. Co., Waterbury, Conn., appointed Metalec Sales Inc., Detroit, as its representative to handle several of the firm's product lines. Included will be contract manufacturing for Scovill's main plant and Oakville Co. divisions and forgings and automatic screw machine products made by the Waterbury concern.

In the Detroit area, Metalec will serve the automotive industry with small stampings, assemblies, wire formed parts, forgings and automatic screw machine products.

Heading Metalec sales are Oscar Mezey, formerly of Scovill's Detroit sales office; William Leckie, formerly with Ford Motor Co.; and Philip McElroy, a Detroit attorney.

No Diamond Dreamer

This worker in the metals plant at Carboloy Department, General Electric Co., Detroit, is not dreaming of giant gems. He is shown polishing one of the stainless steel tumbling barrels, employed in mixing carbide powders with a binder. The binder enables the powders to be pressed into special shapes prior to being transformed into tungsten carbide

Landis Moves Branch Office

Landis Machine Co., Waynesboro, Pa., moved its Chicago office, under the supervision of Paul A. Reynolds, district manager, to 6920 W. North Ave.; its Cleveland office, under the supervision of E. O. Peiffer, to 13967 Cedar Rd.

Alves Heads American Division

Alexander Alves heads the recently formed American Sinterings, a division of American Tool Works, Hartford, Conn. The division, created to experiment, design and manufacture in the field of powdered metallurgy, is in full scale production of electrical and mechanical components.

Vanadium Project Approved

Vanadium Corp. of America, New York, obtained approval of the Atomic Energy Commission, Washington, to install at its Naturita, Colo., mill a roaster for processing vanadium-uranium ores from its

own properties and purchased from many independent producers. This and auxiliary facilities now being built should be in production in the fourth quarter. The company also has exercised its option to purchase the mill at Durango, Colo., which also processes vanadium-uranium ores.

Celebrates 100th Anniversary

Baker-Raulang Co., Cleveland, is celebrating its 100th anniversary this year. Today a leading manufacturer of fork lift trucks and cranes, Baker had its beginning in 1853 when Jacob Rauch, a German immigrant, opened his one-man wagon repair shop on Cleveland's west side. In the century that followed, the company hung up an impressive list of "firsts" in the automotive and industrial truck fields.

Scully-Jones & Co. Expand

Scully-Jones & Co., Chicago, producers of precision holding and driving tools, expanded their facilities for manufacturing Roll-Lock chucking tools. The company recently named new stocking distributors: E. A. Kinsey Co., Columbus, O., and Indianapolis; J. M. Tull Metal & Supply Co. Inc., Atlanta. The Detroit office of Scully-Jones moved to 19372 James Couzens Highway.

Pedigree of Beams

FIRST HISTORICAL record of dimensions and properties of all iron and steel rolled shapes of the past 79 years will be published in September by the American Institute of Steel Construction, New York.

The publication, entitled *Iron and Steel Beams,* 1873 *to* 1952, is primarily for the assistance of architects and engineers who are remodeling or constructing additional floors to buildings erected 40 or 50 years ago, especially when original plans are not available.

Duriron Opens Branch Office

Duriron Co. Inc., Dayton, O., manufacturer of mechanical equipment for corrosive service, opened a direct sales office in Needham, Mass., headed by R. W. Henze.

Union Pacific Keeps New Cars Rolling

Union Pacific Railroad, Omaha, Nebr., is well into the second half of its 1953 freight car building program. In the first six months, 500 flat-bottom gondolas and 500 double-door automobile cars were constructed at Omaha. In the last half of the year, 500 ballast hopper cars, 500 single-door box cars and 500 ore cars will be built at Omaha. Shops at Denver will turn out 100 mill-type gondolas. Total cost for the year will be $20 million

Industrial Tract Developing

Entin Industrial Terminal, about 70 acres along the Passaic river at River road and S. Parkway in Clifton, N. J., was dedicated early this month. Entin Industrial Terminals Inc. built the first building at that location. Projected plants will involve buildings worth more than $5 million.

Metalloy Corp. Liquidated

Lithium Corp. of America Inc., Minneapolis, is liquidating its wholly-owned subsidiary, Metalloy Corp., which previously operated as the chemical and sales division of the parent company.

Westinghouse To Build Plant

Westinghouse Electric Corp., Pittsburgh, will build a plant in Duluth, Minn., to service and repair electrical equipment. In addition to standard machine shop facilities, the plant will have a machine for dynamic balancing of rotating machinery, metal spraying equipment, and several types of electrical testing apparatus.

Hose Maker Changes Firm Name

American Ventilating Hose Co., a division of Callahan Zinc-Lead Co. Inc., New York, changed its name to Flexaust Co. to better identify itself with its products, including a spiral-wire reinforcing hose; a hose with excellent lengthwise compressibility; and a collapsible hose.

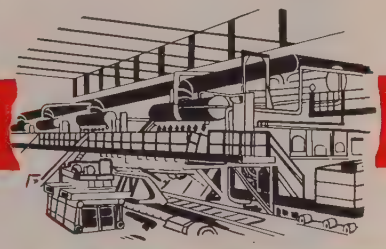
Betmur Builds Warehouse

Betmur Steel Corp. will build a warehouse on its recently acquired property in the vicinity of Ten Mile road and Groesbeck highway, Detroit. The firm is now located at 15843 Second Blvd., that city.

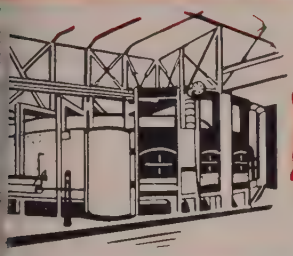
Toledo Firm Names Agents

Toledo Porcelain Enamel Products Co., Toledo, O., a subsidiary of Bettinger Corp., Waltham, Mass., appointed as sales representatives: Hyslop & Fisher, Cleveland; Kennedy Building Products, Livonia, Mich.; L. C. Murphy & Co., St. Louis; Van Scoy Sales Co., Kansas

sk the men who operate them



OPEN HEARTH · SLAB HEATING



ROTARY HEARTH · SOAKING PITS

ALL TYPES OF ANNEALING

CAR BOTTOM · FORGING · OTHERS

they all say RUST FURNACES

do a better job for every metallurgical heating need

"Efficient . . . economical . . . automatic . . . all fuels . . . easy to operate . . . trouble free . . ." Furnace men attest the dependability of all types of Rust furnaces serving metal making plants throughout the world. Patented zone-fired installations account for more than one-third of the heating capacity (excluding soaking pits) of America's iron and steel industry. Also in general use are many of the Company's soaking pits. Rust builds both regenerative and recuperative type pits. Whatever your need there's a type of Rust Furnace (individually designed) to do your job.

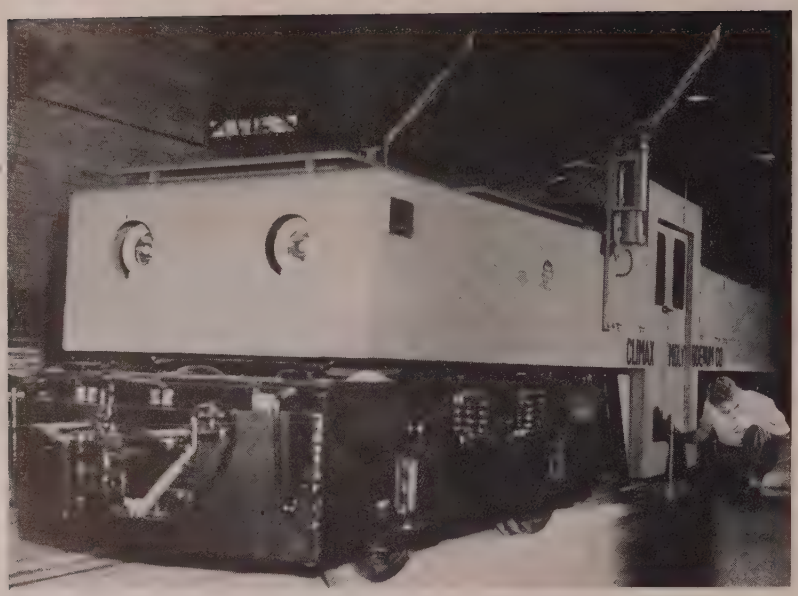
E WHOLE JOB ONE JOB TH A UST "PACKAGE" CONTRACT

One contract covers everything . . . from blue- t through start up. Rust as- nes responsibility for de- n, manufacture, erection, l is prepared to undertake phases of the work with its n forces, including wiring d piping. This results in sub- ntial savings . . . One profit tead of pyramiding ones ch accrue where many subs employed.

RUST FURNACE COMPANY

Pioneers in Furnace Design

RUST BUILDING PITTSBURGH, PA.



Climax Molybdenum Gets Low-Slung Engine

To overcome clearance limitations in Climax Molybdenum Co.'s mines at Climax, Colo., General Electric Co., Schenectady, N. Y., designed this electric locomotive with an over-all height of 6 ft 8 in. To meet the low mine clearance and still provide comfort for the operator, GE engineers employed a drop-center cab which clears the rails by only 8 in. Seven of these units are being built

City, Mo.; Emil Ostman, New York; James W. Keavy, Syracuse, N. Y.; Henry E. Schweinsberg, Fairmont, W. Va.; D-Q Co., Montgomery, W. Va.; Beaman Engineering Co., Greensboro, N. C.; L. C. Wild & Co., Houston; Riggs Industrial Supply Co., Blue Island, Ill.

Tube Distributors Co. Moves

Tube Distributors Co. Inc., supplier of commercial and aircraft quality alloy, stainless and carbon steel tubing and boiler tubes, moved its general offices, stock and heavy equipment to Garden City, Long Island, N. Y.

Plant Will Make Resistors

International Resistance Co., Philadelphia, manufacturer of resistors, is constructing a $400,000 plant in Boone, N. C. Operation of this plant is scheduled by Jan. 1. John Kane will be plant manager.

New Jersey Firm Names Agents

Magnetic Engineering & Mfg. Co., Clifton, N. J., appointed Mills Engineering Sales Inc., Chicago, as its representative in that territory. Mills will handle the firm's entire line, including all types of permanent and electromagnetic separators, lifting magnets, road sweeper magnets and magnetic mining equipment.

Graver Tank Opens Branch

Graver Tank & Mfg. Co. Inc., East Chicago, Ind., opened an office at Atlanta under the supervision of John R. O'Connor, district sales manager. Graver is a fabricator of steels and alloys and a supplier of process and storage equipment for the petroleum and chemical industries.

Baker Building Plant in East

Construction has started on a plant to produce a new platinum-containing catalyst for use in reforming petroleum, says Charles W. Engelhard, president of Baker & Co. Inc., New York, refiners of precious metals. When completed and equipped the plant will represent an investment of $2.5 million. It is being built on Delancey street, Newark, N. J.

Allis-Chalmers Opens Office

General Machinery Division, Allis-Chalmers Mfg. Co., Milwaukee, opened an office in Butte, Mont., in charge of Robert C. Nealey.

Norton Opens Plant in Ireland

Newest member of Norton Behr-Manning Overseas Inc.'s group of foreign plants was dedicated last month in Belfast, Northern Ireland. This brings to 12 the number of grinding wheel and sandpaper factories operated by the export organization of Norton Co., Worcester, Mass.

The parent company's Grinding Machine Division at Worcester established a job lapping department to further advance improvement of product performance in the metals industry through greater use of precisely lapped parts.

Rajac Equipment Sales Formed

R. G. Pence, J. W. Cleveland and John T. Brown formed the Rajac Equipment Sales Corp., Lincolnwood, Ill., for the sale of miscellaneous foundry equipment in the midwestern states.

Gunnison Homes Changes Name

Gunnison Homes Inc., New Albany, Ind., a subsidiary of United States Steel Corp., changed its name to United States Steel Homes Inc. The company will begin production of factory-made steel buildings at its new plant in Harrisburg, Pa., within a few weeks. Production of Gunnison line of wood homes will continue at the New Albany plant.

GE Continues To Expand

General Electric Co., Schenectady, N. Y., plans to build a plant at Jonesboro, Ark. It will be part of the company's specialty fractional horsepower motor department and will manufacture small blower and fan motors for refrigerators, air conditioners and other equipment. The department will maintain its headquarters in Ft Wayne, Ind.

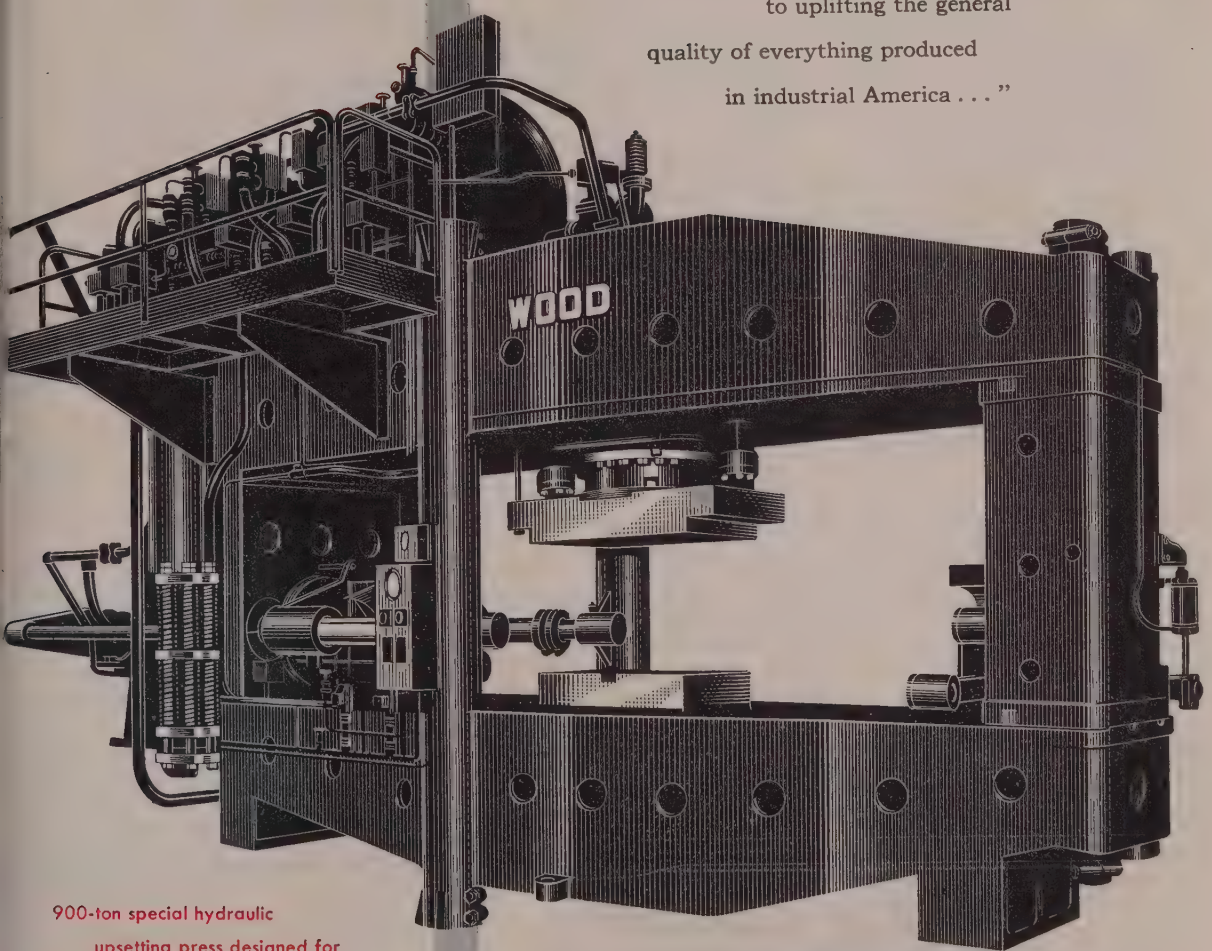
The company is building a $3.5 million product development laboratory for its large steam turbine and generator department in Schenectady.

A $1-million building project second to be announced this year

R.D. Wood Hydraulic Presses

150th anniversary

"... that industrial equipment
which has maintained
high excellence in manufacture
will continue to be sold,
and will contribute its worth
to uplifting the general
quality of everything produced
in industrial America ..."



900-ton special hydraulic upsetting press designed for general upsetting work on steel tubes, bars, shafts, axles, etc. *Write for catalogs of our hydraulic presses.*

RDW WOOD

R. D. WOOD COMPANY

PUBLIC LEDGER BUILDING, PHILADELPHIA 5, PA.

HYDRAULIC PRESSES AND VALVES FOR EVERY PURPOSE • ACCUMULATORS • ALLEVIATORS • INTENSIFIERS

Sound advice...

"LOOK-before you LEAP!"

If you are considering plans for expansion of present heat treating facilities or new plant construction, "Look Before You Leap"—check with an MTI commercial heat treater.

The chances are that you will find a Commercial Heat Treater near your plant with the facilities, equipment, skill and experience to perform "custom-tailored" heat treating operations required for your prime or sub-contract rearmament program work.

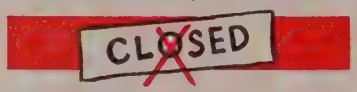
Eliminate Personnel Problems

All members of the Metal Treating Institute are specialists with complete service facilities under one roof. They offer you a variety of skills — handling and processing all types of heat treating from simple stress relief to delicate controlled atmosphere hardening, cyaniding, etc. This experience and know-how would be practically impossible for you to duplicate under today's conditions.

Avoid Future Waste

The recent post-war years proved the wisdom of using established facilities in your locality. Many expanded plant departments and new construction had to stand idle or be scrapped when the crisis passed.

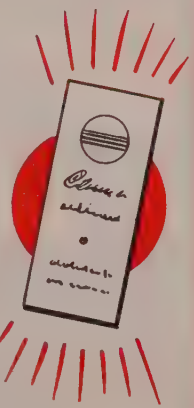
It is good business to avoid possible repetition. Remember, even if only Government money is involved at



the present time, you will pay part of the cost eventually. Conservation of Government spending is always of benefit to you.

A Good Policy

When faced with heat treating problems, or the need for heat treating services, contact the Metal Treating Institute or any MTI member listed on this page. All detailed inquiries receive prompt attention.



National Trade Association

COMMERCIAL HEAT TREATERS

METAL TREATING INSTITUTE

271 NORTH AVENUE — NEW ROCHELLE NEW YORK

MTI MASTER CRAFTSMEN — METAL TREATING INSTITUTE

Consult these Companies*

- **Ace Heat Treating Company** — Elizabeth, New Jersey
- **Anderson Steel Treating Co.** — Detroit, Michigan
- **Benedict-Miller, Inc.** — Lyndhurst, New Jersey
- **California-Doran Heat Treating Co.** — Los Angeles 23, California
- **Commercial Metal Treating, Inc.** — Bridgeport, Conn.
- **Commercial Steel Treating Corp.** — Detroit 4, Michigan
- **Cook Heat Treating Co. of Texas** — Houston 11, Texas
- **The Dayton Forging & Heat Treating Co.** — Dayton 3, Ohio
- **The Drever Company** — Philadelphia 33, Pennsylvania
- **Greenman Steel Treating Company** — Worcester 5, Massachusetts
- **Fred Heinzelman & Sons** — New York 12, New York
- **Alfred Heller Heat Treating Co.** — New York 7, New York
- **Hollywood Heat Treating Co.** — Los Angeles 38, California
- **Industrial Steel Treating Co.** — Oakland 8, California
- **L-R Heat Treating Company** — Newark, N. J.
- **The Lakeside Steel Improvement Co.** — Cleveland 14, Ohio
- **Metal Treating, Inc.** — Milwaukee 4, Wisconsin
- **Metallurgical Control Labs.** — Minneapolis 7, Minnesota
- **Metallurgical, Inc.** — Kansas City 8, Missouri
- **Metlab Company** — Philadelphia 18, Pennsylvania
- **Metro Heat Treating Corp.** — New York 13, New York
- **O. T. Muehlemeyer Heat Treating Co.** — Rockford, Illinois
- **Nerl Heat Treating Corp.** — South Bend, Indiana
- **New England Metallurgical Corp.** — South Boston 27, Massachusetts
- **Paulo Products Company** — Saint Louis 10, Missouri
- **Pearson Industrial Steel Treating Co.** — Chicago 50, Illinois
- **Pittsburgh Commercial Heat Treating Co.** — Pittsburgh 1, Pennsylvania
- **The Queen City Steel Treating Co.** — Cincinnati 25, Ohio
- **Reliable Metallurgical Service, Inc.** — Cleveland 14, Ohio
- **J. W. Rex Company** — Lansdale, Pennsylvania
- **Stanley P. Rockwell Company** — Hartford 5, Connecticut
- **Syracuse Heat Treating Corp.** — Syracuse, New York
- **Vincent Steel Process Co.** — Detroit, Michigan
- **Winton Heat Treating Company** — Cleveland 16, Ohio

This advertisement sponsored by these companies

or GE's power transformer department at Pittsfield, Mass., was disclosed. An addition to the power transformer tank shop will be built to increase production in the large transformer sizes.

Aeroquip Buys Ohio Plant

Aeroquip Corp., Jackson, Mich., acquired the plant of Sterling Electric Motors Inc. located at Van Wert, O. Aeroquip manufactures flexible hose lines with detachable, reusable fittings and self-sealing couplings. The company is transferring its Cheboygan, Mich., operations to the Van Wert plant.

Speedways Conveyors Moves

Speedways Conveyors Inc., manufacturer of materials handling equipment, moved to new quarters at 202-208 Rhode Island St., Buffalo. These facilities will permit an increase of 100 per cent in production and will facilitate the addition of more new items to the firm's line.

A. O. Smith To Build Plant

A. O. Smith Corp., Milwaukee, is constructing an automobile frame manufacturing plant in Granite City, Ill., at a cost in excess of $5 million. A supply of mill steel is assured from Granite City Steel Co. which is expanding its capacity to 1.2 million ingot tons by the end of this year. A. O. Smith is completing construction of a welding electrode plant in Lancaster, Pa.

Ames Appoints Representative

Barwood & Co., Philadelphia, were appointed representatives for B. C. Ames Co., Waltham, Mass., manufacturer of micrometer dial indicators, micrometer dial gages and accessories.

Industrial Truck Agent Moves

Frank L. Young Co., franchise representative of Automatic Transportation Co., Chicago, moved to 1723 Leavenworth St., Omaha, Nebr. Young handles complete lines of Automatic riding-type electric fork lift trucks and battery powered driver-led trucks.

Steel Distributor Names Agents

A. B. Murray Co. Inc., warehouse distributors of tubular steel products, Elizabeth, N.-J., and McKeesport, Pa., appointed as its field representatives: Richard J. Zott for the metropolitan New York area; Kenneth F. Jones for southeastern Ohio, Kentucky, Tennessee and Indiana; and Richard G. Reilly, western New York state.

Fast Worker

CONSTRUCTION and operation of a high-speed general-purpose digital computer (electronic brain) was announced by Argonne National Laboratory, Lemont, Ill. It will be installed at Oak Ridge, Tenn., early this fall.

The $350,000 computer, known as the Oracle, has the greatest memory capacity of any general-purpose computer ever built. It can retain and process as many as 2048 twelve-digit decimal numbers; is provided with a remotely-controlled auxiliary memory system which provides for the memorizing of a million words; can multiply 12-digit numbers in less than 1/2000 of a second. A mathematical problem which would take about five to six years for two mathematicians to solve with the use of desk-type calculators could be completed in about 20 to 30 minutes by the Oracle.

It is a complex instrument. It contains 3500 electronic tubes, about 20,000 resistors and about seven miles of electrical wire.

Iron Furniture Plant Opened

Pacific Iron Products, Los Angeles, opened a new factory for manufacture of wrought iron furniture.

Will Build Battery Plant

Robinson Co. Inc., Blair, Nebr., will erect a plant in Mt. Vernon, Pa., for the manufacture of a new type of automobile battery. The battery is a self-recuperating device. The firm was organized in 1950.

Light and Strong

Versatility of Seaporclad curtain wall panels, manufactured by Seaporcel Metals Inc., Long Island City, N. Y., is evidenced by its application as spandrels on the facade of this hospital in Seattle. The material, composed of an aluminum honeycomb core with a porcelain face and finished in color, is only 3/8 in. thick

Garrard Joins Aircraft Group

George S. Garrard has joined the staff of Aircraft Industries Association, Washington, as secretary of the engine, propeller and rocket technical committees. Mr. Garrard formerly was with the Civil Aeronautics Administration's Powerplant Engineering Division, that city.

Detroit Firm Expands

Detroit Steel Products Co., Detroit, began operations at its West Elizabeth, Pa., plant. The concern is a manufacturer of light-gage steel building panels and steel windows and doors. The new plant is turning out only roof deck panels and will produce wall and floor panels soon. Robert E. Harris is plant superintendent. Total productive facilities of the company will be increased by almost 10 per cent when the new plant is in full production.

"surpassed

"the builder's guarantee"

Why is it that such a high percentage of steel produced in this country passes through Surface Combustion equipment in one or more stages of its processing? Part of the answer might be furnished by a list of steel making advances in which our engineers have participated. The one-way fired soaking pit . . . the remotely located single recuperator serving a number of holes . . . the research which led to substantial increase in pit sizes without sacrificing the simplicity of the one-way firing principle . . . the jet pump which facilitates handling heated air in high volumes with low equipment maintenance . . . these you may recall as developments to which 'Surface' engineers contributed.

There's a more basic answer however: typically expressed in a customer's published report of comparatively recent 'Surface' soaking pit installation: "tons per hour . . . and fuel savings as shown by Btu/ton figures . . . has *surpassed the builder's guarantee.*"

This business of making one's word good is by no means unique at 'Surface'. We like to believe however that we combine this old-fashioned way of doing business with an exceptionally effective combination of metallurgical and construction skills based on two generations of experience and growth with the steel industry.

Whatever long-range capital investments you may be planning in making pits, slab heaters, annealing covers, continuous annealers, or any equipment involving combustion, we suggest you tap the "proven resources" of cost-saving skills and experience at 'Surface'.

"Operative Results of One-Way Fired Recuperative Soaking Pits by E. H. Cauger and J. C. Stamm, Jr., IRON & STEEL ENGINEER, December 1952

SURFACE COMBUSTION CORPORATION • TOLEDO 1, OHIO

One-way fired soaking pits • Billet reheating furnaces • Slab heating furnaces • Continuous type, controlled atmosphere strip annealing and normalizing furnaces • Controlled atmosphere annealing covers for wire and rod • Controlled atmosphere annealing covers for coil and sheets • Continuous furnaces for heat treatment of steel plate • Controlled atmosphere furnaces for carbon correction in high alloy rod and bar stock • Continuous type bright annealing and normalizing furnaces • Prepared gas atmosphere generating equipment • Pit type convection furnaces for rod annealing • Stress relief furnaces • Wire patenting furnaces

Flying sparks, goggles and torches look strange in an art studio

Three Lions

Sculpture In HOT STEEL

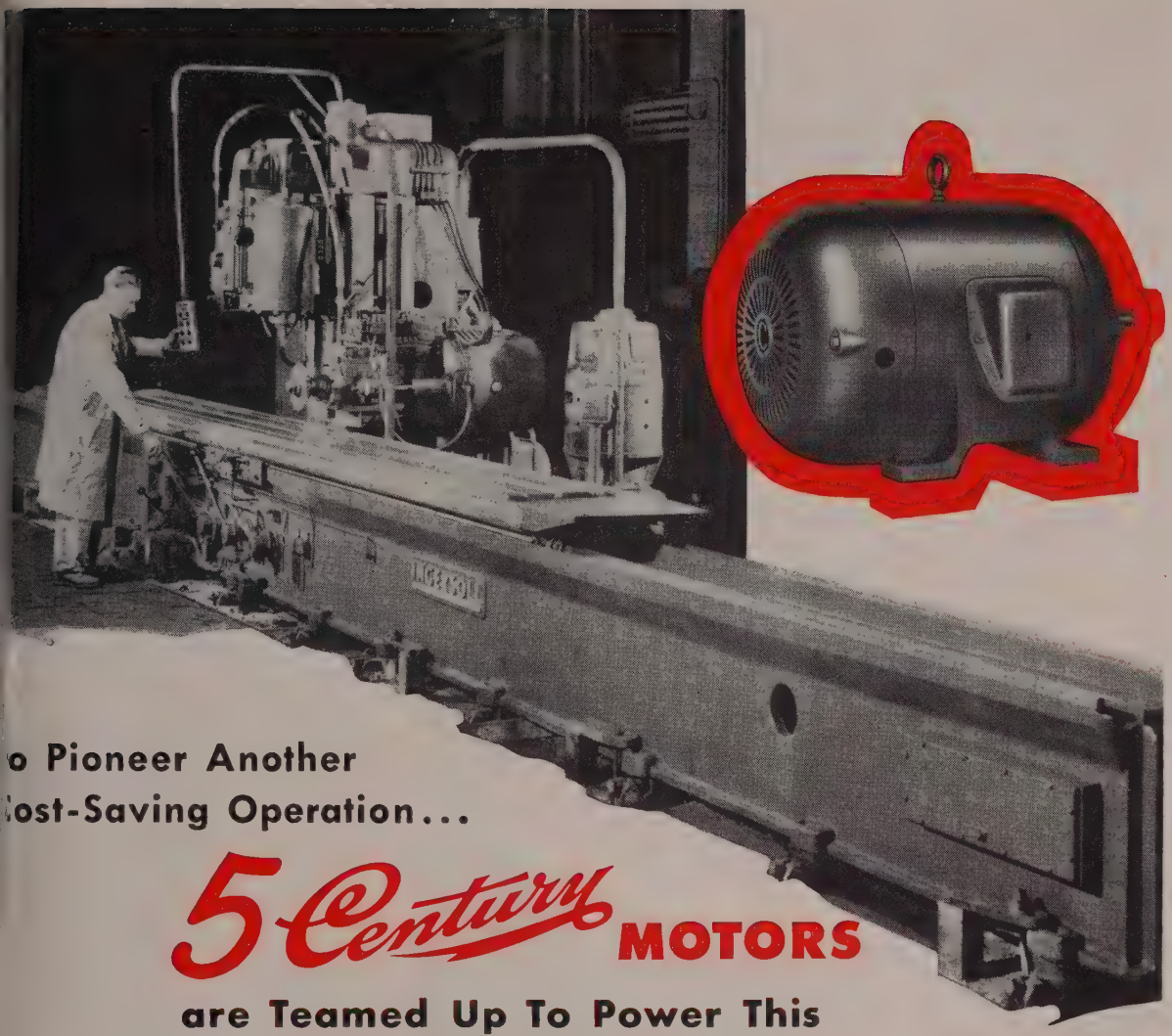
IN SURROUNDINGS more in keeping with a shipyard than a studio, artists at New York's Sculpture Center are turning hot metal into amazing sculpture. Artisans for ages past have formed metal into art, but sculpture made drop by white hot drop with a welder's torch is new under metalworking's sun.

The sculptures begin with a framework of wire and metal strips. Over the framework, weld metal is built up with a gas torch to achieve the rough, pitted surface characteristic of this new art form. In fact, much of the charm of welded sculpture lies in the pits and blobs which would be the ruin of a weld on any ordinary metalworking job.

Welded sculpture is built up drop by drop with the acetylene torch

Praying mantis shows delicate effects possible by welding

Ragged steel seems like ideal treatment for water buffal



o Pioneer Another
ost-Saving Operation...

5 Century MOTORS

are Teamed Up To Power This 22-Foot Keyway Slotter

This well-coordinated team of Century motors . . . each one engineered for top efficiency in its own specific job . . . brings out the best performance in this important new piece of equipment.

Here is another example of how leading manufacturers choose Century motors to power their finest metalworking equipment. You'll find it worthwhile to follow their example and specify Century motors on all your equipment. Your nearby Century district sales office or Century distributor will be glad to give you more information.

⅛ to 400 h.p.—A.C. or D.C.—Drip Proof, Splash Proof, Enclosed Fan Cooled and Explosion Proof frames for almost all atmospheric conditions—unusually free from vibration.

800

Century C MOTORS

CENTURY ELECTRIC COMPANY

1806 Pine Street • St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

AUTOMATION with FEDERAL WELDERS CAN CUT COSTS!

Automation is a word invented by production-minded people to describe the automatic handling of material in process, the combining of two or more operations into a single operation to reduce costs and speed production.

Perhaps one of the greatest advances of automation has been made in the resistance welder field where Federal has taken the lead in designing and building welders that have successfully combined forming, handling and/or assembly with welding.

This advancement has, in many production shops, actually eliminated the "welding bay," and made welding an all-important station in the production line.

If welding is part of your operation you should get the facts of cost-cutting automation in resistance welding, and to make sure of getting the complete story consult Federal — "First in Resistance Welding."

THE FEDERAL MACHINE & WELDER COMPANY
WARREN, OHIO

New Machine Designed

Hautau Engineering Co. claims its automatic nut-torquing assembly units will cut costs

NEW LINE of automatic nut-torquing assembly machines, designed to cut assembly line labor costs and improve product quality of bolted assemblies, is now available from Hautau Engineering Co., Ferndale, Mich.

These hydraulic powered multiple spindle machines will automatically tighten a nut or bolt to a given torque specification, tighten a bolt to a specified elongation or drive a stud to a given depth. They act as automatic gaging machines and reduce scrap since individual spindles will not drive bolts, studs or nuts if their thread fits exceed specified tolerances or if the fastener is improperly started.

Unique Drive—The heart of the machine is a patented drive in which each spindle is powered by a hydraulic fluid motor. The motor is either direct-connected to the torquing spindle or a double-enveloping cone-drive worm gear set is provided in the drive, depending on the torque requirements.

Cleco Appoints Distributor

Cleco Division, Reed Roller Bit Co., Houston, appointed J. Pegel & Son Hardware Co., Pottstown, Pa., as distributor in that area for its air tools and accessories.

Regan Engineering Corp. Moves

Regan Engineering Corp. moved its complete plant and offices to 501-507 Oakland Ave., Mukwonago, Wis. The company makes heating elements and units and industrial resistors.

Tool Engineers Open Chapters

Two new chapters were chartered by American Society of Tool Engineers, Detroit. R. F. Gietz, senior production engineer, Oldsmobile Division, General Motors Corp., was elected chairman of the new chapter at Lansing, Mich. Carl H. Smith, superintendent, W. Bliss Co., chairman of the Canton, O., chapter.

Catch fish with wire rope?

Yes, gentlemen, there's more fish caught with wire rope than ever nibbled at a baited hook. Satisfying America's appetite for nutritious seafood is a stupendous job, calling for fleets of fast, powerful trawlers that net their catches in prodigious quantities. To hold and haul in the heavily laden nets, the fishing industry annually uses millions of feet of wire rope.

There's a good chance the fish you eat comes to your table with the help of Wickwire Rope. Because, for over half a century, Wickwire Rope has "grown up" with the nation's fisheries. As in so many other activities where wire rope is used, the men who man the fishing fleets have a high regard for its strength and durability under the toughest conditions.

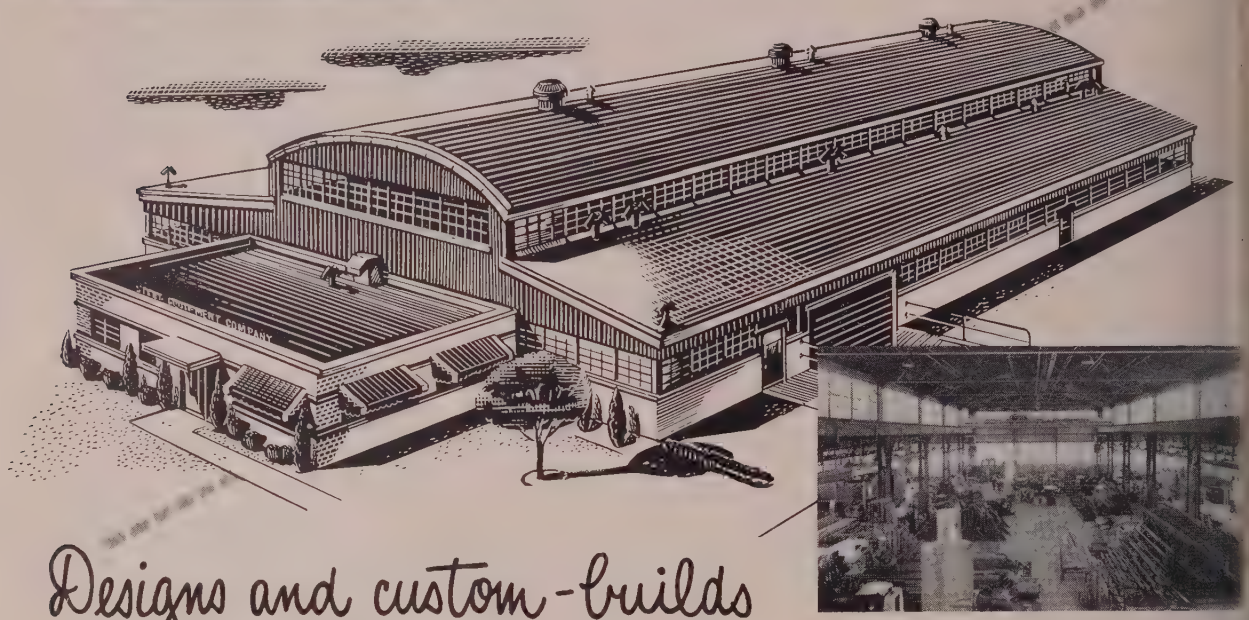
A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver
Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland
Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga
Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

WICKWIRE ROPE
CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

1757

SECO in its new modern plant-



Designs and custom-builds

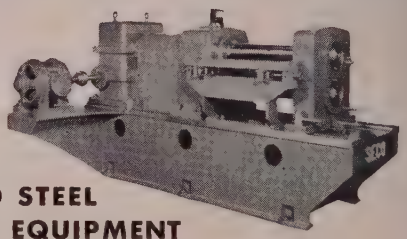
EFFICIENT SLITTING LINES

and Equipment for Steel Mills, Manufacturers, Warehouses

Every facility for custom building efficient slitting lines and cold-rolled strip mill equipment is in the new SECO plant. More and more leading manufacturers are turning to SECO for precision equipment that gives outstanding performance.

Put your problem up to SECO and you'll get the right equipment—with the most efficient features—to meet your specific requirements. SECO engineering ingenuity, backed by the most modern plant facilities, is your assurance of trouble-free, high-production equipment.

SECO engineers, designers and craftsmen have had years of specialized experience in this field. Consultation on your requirements is invited. You're welcome to visit our new plant at any time.



SECO STEEL MILL EQUIPMENT

Leveling and Shearing Lines • Combination Edging and Flattening Lines • Tension Reels for Strip Polishers • Narrow Strip Grinding Machines • Multiple Strand Pull-Out Rolls and Take-Up Frames • Strip Coilers of the Up and Down Coiling Types • Traverse Reels for Narrow Strip • Steel Coil Up-Enders • Scrap Ballers.

STEEL EQUIPMENT COMPANY
P. O. BOX 737, WARRENSVILLE STATION
CLEVELAND 22, OHIO

SECO

STEEL

August 17, 1953

Technical Outlook

VERTICAL MILLER—A vertical milling machine large enough to handle any part produced by the heavy press program is under construction at Portland Machine Works Inc., S. Portland, Me. A pilot unit will be running within 30 days; components already have been bench-tested. The machine can accommodate work up to 10 inches, operates at speeds to 10,000 rpm and head can follow contours throughout 360 degrees. The 45,000-pound miller has 120-inch table travel, 20 or 32-inch cross travel.

TAILORED TITANIUM—Titanium strip with tolerances of ±0.0001 inch in widths up to 8 inches and thicknesses down to 0.0005 inches is being rolled by Industrial Division, American Silver Co., Inc., Flushing, N. Y. Commercially pure metal is processed on precision 2-high, 4-high and Sendzimir rolling mills.

NICKEL PROTEST—Nickel starved chrome furniture industry will seek revision of NPA schedule 1, Order M-80, through an appeal by its Advisory Committee, according to the U. S. Department of Commerce. Amendment in issue restricts nickel undercoat for chrome to 0.00005 inch.

TEST STANDARDS—New step toward standardization takes form with approval of tentative methods and definitions for mechanical testing of steel products at recent ASTM annual meeting. Methods cover production tests for wrought and cast steel products to evaluate properties called for in specifications. Tests described: Tension, bend, hardness and impact. Details are specified pertaining to bar and tubular products.

MORE ELECTRIC—During first six months of this year, electric furnaces made 4.2 million tons of steel or 34.5 per cent more than last year, compared with an increase of 29 per cent in total steel output. Surprising point: About one half of electric production was carbon steel. There is a definite trend in direction of electrics, particularly among smaller steel companies. Size of furnaces is growing too. American Bridge is building two 200-ton Heroults for McLouth Steel Corp., Detroit. With inside diameters of 24½-feet, they will be the largest for steel in the world.

TOUGH ALUMINUM—Alcoa hardcoat makes aluminum surfaces file-hard and more resistant to wear than chromium plating or hardened steel, according to Metal Finishing Division, Pyrene Mfg. Co., Newark, N. J. Another application is in conjunction with electrofilm process that impregnates surfaces with a permanent, solid-film, dry lubricant.

NEW TRANSISTORS—Development of two new types of transistors that outperform earlier models of the midget crystal amplifying devices was reported by Sylvania Electric Products Inc. Known as tetrode and pentode transistors, they are expected to have tremendous impact on the field of crystal amplifiers that perform many of the functions of vacuum tubes. New additions are expected to supplement, not replace, the earlier types.

BRAZING TIP—A new development in brazing cast iron has prompted one auto manufacturer to investigate brazing cast iron sections for cylinder blocks. Production economy will be the pay-off if it works.

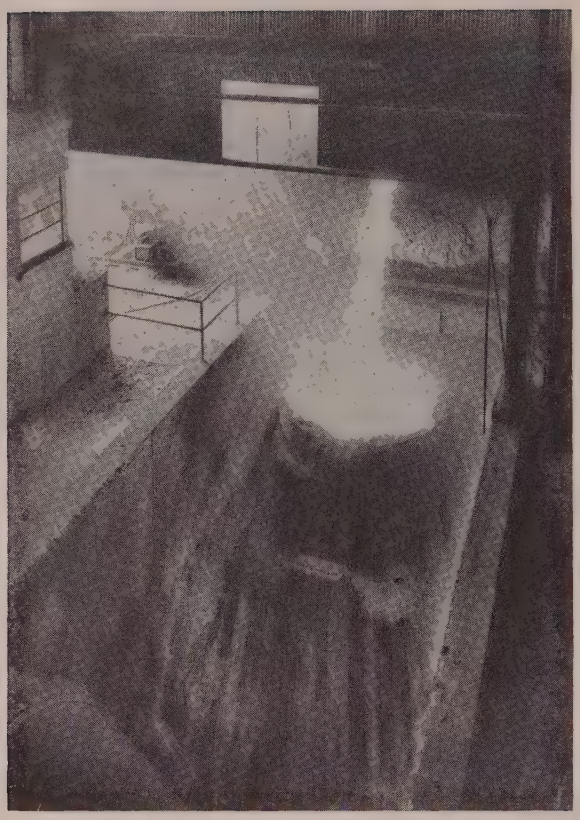
WHAT'S ON THE INSIDE—Cover article on electronic weighing is a must if you're involved in intra-plant flow of materials. Versatility of this tool may solve some of your tougher applications. Story's on p. 110 . . . If you haven't looked into the vacuum technique of coating your brightwork, you'll find some good ideas on p. 166 . . . Troubled with waste disposal? Allison's problems and solutions are probably similar to your own, p. 156 . . . There are also some tips on converting band saws to vertical line grinders, p. 114 . . . And a report on Boeing's success with their machine rebuilding program, p. 124 . . . These, plus a selection of thought-provoking stories.

Metalworking Outlook—p. 59 *Market Outlook—p. 179*

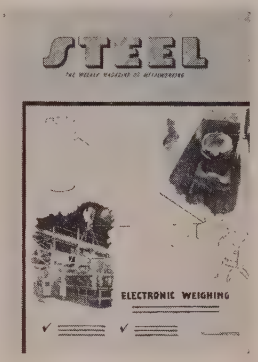
Plants Gain Weight with Electronic Scales

Versatile unit was created by combining two proved devices, the strain gage and electronic instrumentation. Management can fit it profitably into material handling picture

By HARRY CHANDLER
Associate Editor



Four load cells were incorporated into hot metal ladle car to construct a platform-type electronic scale. The instruments were remotely located in the control house



AS a competitor in the weighing industry put it, "The electronic scale bears watching." You can see readily what the gentleman had in mind by studying a typical case history.

Steel Company X, for instance, ran into an unforeseen snag in the installation of track scales to weigh hot metal ladles at its open hearth furnaces. Excavation for scale pits beneath transfer car tracks meant going below river level.

Aside from the apparent impracticality of the project, management was confronted by another consideration: Hot metal spills in the vicinity of water create an explosion hazard.

Obvious courses of action were to abandon the work or redesign the entire operation to fit the scales. But officials at Company X held these decisions in abeyance and called in the electronic scale people, who bypassed the pit question by incorporating electronic scales into the transfer car.

Perspective — Examples like those of Company X are everyday trade talk among electronic scale men, but they're quick to add their product isn't a cureall that will replace the conventional lever scale. In the words of Verne C. Kennedy, president, Streeter-Amet Co., Chicago, one of the major producers:

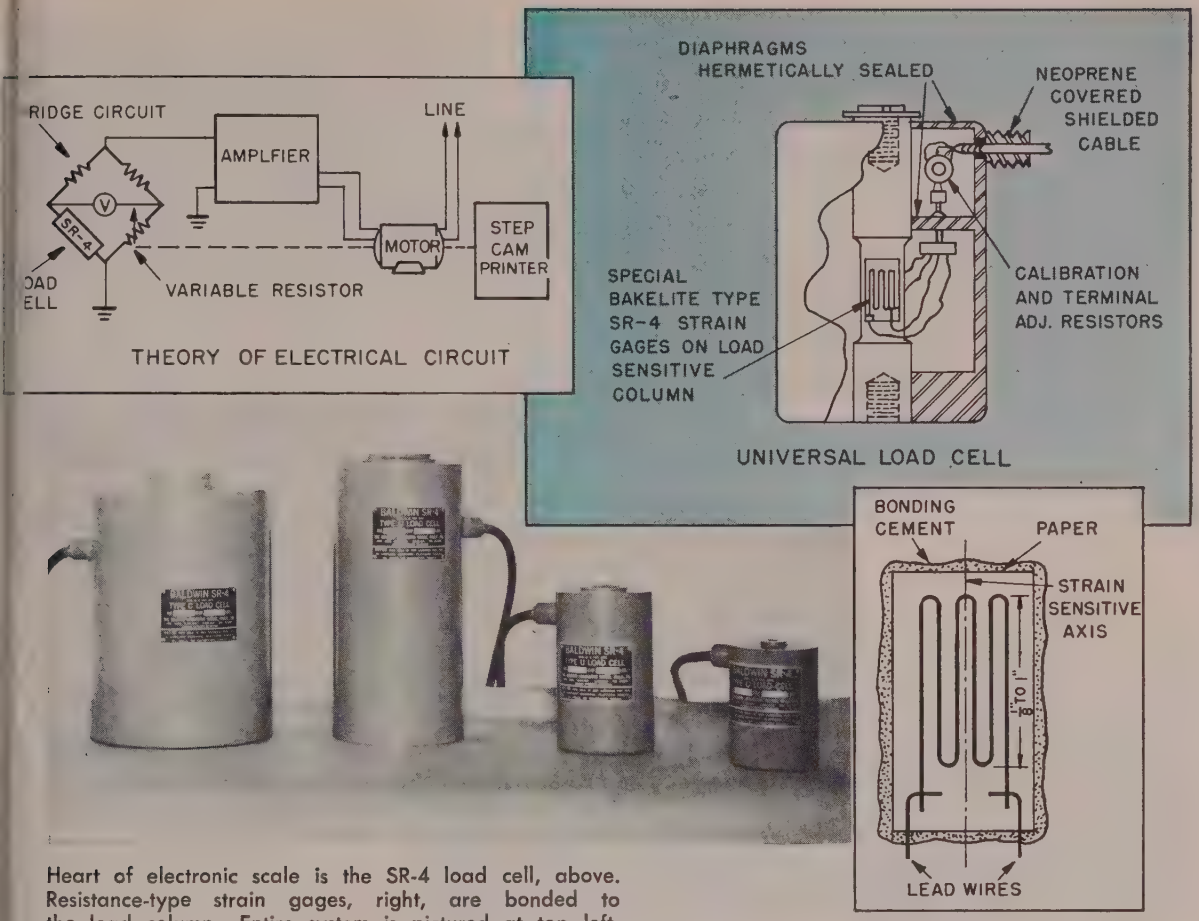
"From an accuracy standpoint, electronic weighing is probably no better or worse than other methods. Principal factor that makes the electronic scale attractive is its adaptability to many difficult problems that have been hard to solve with other methods."

Flexibility is joined by a second inherent advantage. The load cell, heart of the electronic system, reduces all weight information to electrical values. It is a simple matter to instrument the scale.

Dividends—The installation at Company X paid a threefold dividend: 1. Pit problem was avoided; 2. One scale did a job normally requiring two lever units; 3. Weight indicating instruments were placed in the operator's control house.

With remote instruments, the operator was able to co-ordinate the weighing operation with car pullers and bottle tilting drive in the control house. The scale dial gave him visual checks, while the same information was permanently recorded by a printing device.

By fuller exploitation of instrumentation, weight information could have been relayed from the control house to scale dials and printers at any remote point or points within the plant, including the accounting department or superintendent's office.



Heart of electronic scale is the SR-4 load cell, above. Resistance-type strain gages, right, are bonded to the load column. Entire system is pictured at top left.

Trend — Because the electronic ale is versatile, management is ying increasing attention to it an added tool for material han- ing and quality control.

Of course, it's customary to ink of correct weight in terms buying and selling. With sales $100 million a year, a steel com- ny operating 200 to 300 scales n lose $100,000 during the pe- d by donating an average over- ight of 0.1 per cent.

Same reasoning applies to in- aplant or process weighing. Ar- ur Sanders, secretary, National ssociation of Scale Manufactur- s, has this to say:

"No matter what kind of layout operation you have, it is prob- le that more effectively designed ales would save money as well protect you from the greatest ief in America — incorrect eight, the silent thief you can't osecute."

Going back to the $100 million mpany, an upgrade of 0.1 per cent in intraplant and process efficiency can add $100,000 to the gross each year. There are many spots where inadequate or no weights are obtained along the flow of raw materials to the finished product.

Applications — Electronic scales often can be fitted into a job or process to obtain weights where and when they're needed. Typical, intraplant installations weigh open-hearth iron ladles, charged materials, ladles of steel, ingots, billets, slabs, sheets and coils. Types include platform, track, crane, conveyor and tank scales. In some instances, electronic units are incorporated into conventional lever scales.

How does the electronic scale fit into the intraplant weighing picture? Take the example of the open hearth, where the charging process for steelmaking is regulated on a weight basis. Usual practice is to weigh charging buggies with 10,000 to 20,000-pound

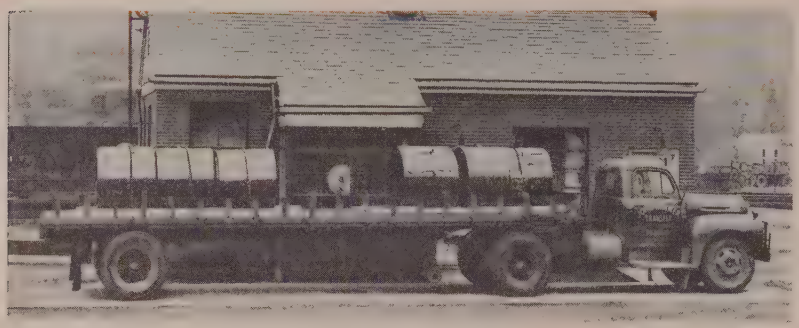
Crane scale offers instrumentation where the operator can read weights without difficulty. Single load cell is installed in the harness assembly which is located above the heavy hook. Indicating dial of conventional scale is normally placed in hook assembly.

CALIBRATION TEST

June 16, 1953

Type Scale: Gilmore Industries electronic scale, Model 106—Serial 91; 10 x 50 feet platform—100,000 lb; capacity.
Test Method: State of Pennsylvania (36,000 lb Test Truck)

Location of Load	Test Results: Test Weight	Scale Reading on dial estimating between 50 lb Divisions	Error
No Load	0 Lbs	0 Lbs	0 Lbs
West End	4000	4000	0
No Load	0	0	0
Center	36,000	36,025	+25
Rear Wheels at West End	36,000	35,985	−15
Front Wheels at East end	36,000	36,000	0
Rear Wheels at East End	36,000	35,990	−10
Slightly East of Center	36,000	36,000	0
Front Wheels at West End	36,000	35,995	− 5
No Load	0	0	0



Truck installation is a conventional application of the electronic scale. Load cells are positioned under platform or in the existing lever system. High accuracy of this installation is shown by its calibration test above.

loads as they move across a track scale. Errors of 5 per cent are common.

An electronic scale at this point will determine accurate weights in 4 to 6 seconds. Instruments now available will afford automatic digital printing of net weights in tabular form for direct use without translation; pushbutton insertion of correct tare weights; printing of tare weight code alongside the record for check purposes; and multiple carbon records for permanent use by stockers, expediters, operators and melters.

History—Electronic scales were born of necessity during World War II. The Air Force needed portable platform scales to check cargo weights at fields scattered all over the world. Cox & Stevens Co., Mineola, N. Y., came up with the answer by combining two proved devices: The strain gage and electronic instrumentation.

Resistance-type strain gages are bonded to each of the four surfaces of a steel load-bearing column to form the basic components of a load cell.

SR-4 cells, product of Baldwin-Lima-Hamilton Corp., Philadelphia, are used universally in electronic scales. Compact cylindrical units can be applied singly or in series, in standard capacities from 500 to 200,000 pounds. Larger installations have capacities up to 1.2 million pounds, but theoretically there is no limit.

Theory—Following Hook's law of proportionality between stress and strain, electrical resistance of strain gages changes in proportion to deflection of the load column.

When force is introduced on a load cell, strain gage output voltage is fed to a balancing bridge arrangement, which is a Wheatstone bridge formed by connecting the four strain gages in series.

Since the system is initially in electrical balance, the introduction of voltage across one leg of the bridge brings about an unbalanced condition. This difference represents weight of the object on the scale.

Conversion — Difference in potential is directed to an amplifier, where the signal is stepped up to operate a servobalancing motor, which does two things: 1. Causes a precision potentiometer to rotate until the system is back in balance; 2. Drives the recording apparatus.

Recording apparatus has a series of step cams that convert rotational information from the servo motor to digital information on the printer. Step cams are positioned at a point proportional to the weight on the scale. When a print is desired, a switch is closed, which activates the printer motor. Set of fingers linked to type-wheels is moved into position on the step cam by a cam working off the printer motor. Fingers are directed into the correct step by correlating and step-over cams.

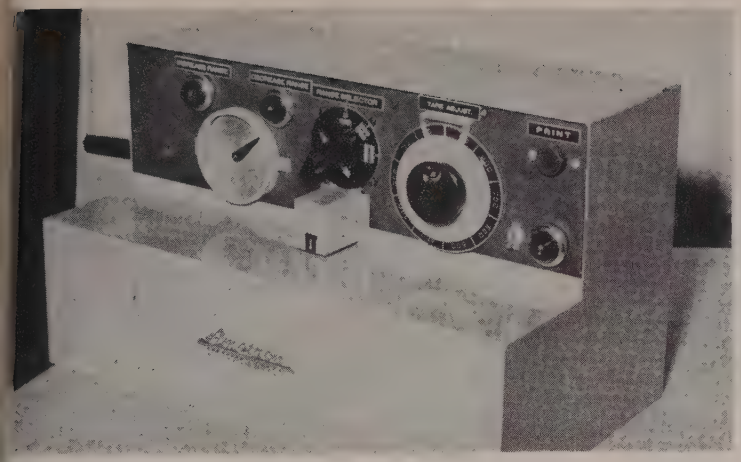
Time required for the unit to position its recording apparatus and print a weight is 4 to 6 seconds.

Operation — If recorder reads other than zero when no load is aboard the scale, it may be corrected through a zero balance unit. A tare weight compensator also is available.

As with lever scales, accuracy of measurement is well within the requirement of National Conference on Weights and Measures which is 1 part in 1000.

Recording is simplified if minimum graduations are in units of 10, 100, 1000, etc. Gearing problems may come up if other series are used because our number system is based on tens.

Scales normally are designed to operate on 115-v, 60-cycle, single phase power with voltage tolerances of plus or minus 10 per cent and a frequency tolerance of plus or minus 0.5 cycle. Unit re-



This unit will print weights on tickets or cards at remote points. Its major controls include zero balance adjustment, a range selector and the tare weight control

Visual dial can be used alone or combined with printer. It is possible to have both instruments serve more than one scale to centralize process or intraplant control

quires at least 80 w continuously, with a peak load of 400 w during printing.

Recording Devices — Suppliers have several types of recording devices, including visual dials, cabinet, wall, ledger sheet and desk models. Records are on standard adding machine tape, small and large tickets or ledger sheets.

With few qualifications, recording devices at different remote points may record the weight of one scale, or one recording instrument can service several scales.

Limitations — Electronic scales offer high accuracy and dependability. Cells are hermetically sealed and can be subjected to oil, water or dirt without affecting accuracy. Limitations are temperature, shock and eccentric loading.

Weight of scrap and other material used in steelmaking can be controlled electronically. Application calls for either platform or crane-type unit

When cells are exposed to sudden temperature changes, hot or cold, the cell casing responds faster than the load column. This introduces error until the temperature of the entire unit reaches equilibrium.

Effects of temperature can be offset by lagging cells with insulating material to reduce the rate of heat transfer. Radiation shields also are used; in extreme cases, cooling with air or water is possible.

Overloads—Cells have no moving parts, but they can be damaged. Cell damage or zero shifts are not caused by loads up to 120 per cent of capacity. Because cells have high response speed, they react to shock loads, which should not exceed 120 per cent of capacity. Overloads of 150 per cent of capacity may cause a slight zero shift. Damage results if such loads are frequent.

Normal loads exert their force on the center axis of cells. Eccentric loads, which are perpendicular to the center axis, should not exceed 25 per cent of rated capacity. This type of load also introduces error.

Economics — Costwise, the electronic scale doesn't become practical until you think in terms of higher capacity units. A large manufacturer of electronic scales places the breakeven point at about 20,000 pounds. Without a doubt, lever-type scales maintain a cost edge in smaller capacities, he said.

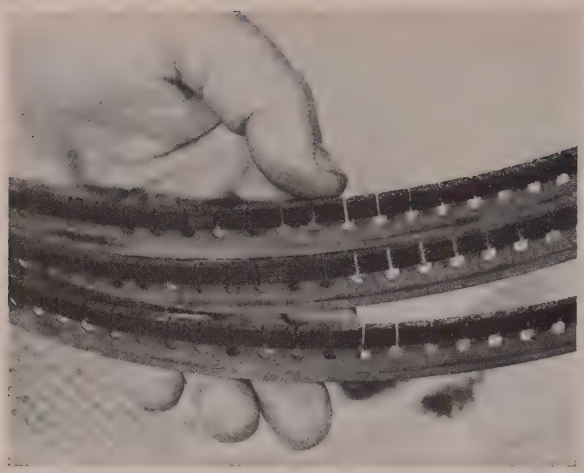
Maintenance, another dollars and cents factor, presents no new problems. Regular radio parts may be used to facilitate replacements and renewals. An accident that damages a load cell merely involves replacing that unit with a similar one and adjusting the circuit accordingly. Competent technicians now on the payroll can do the work.

Oak Ridge Gets Computor

Completion of what is reported to be the world's fastest digital computor has been announced by Argonne National Laboratory. The computor, known as the Oracle (Oak Ridge Automatic Computor, Logical Engine) will be used by Oak Ridge National Laboratory's mathematical panel.

The new electronic brain was built for $350,000, can receive, retain and process as many as 2048 twelve-digit numbers. It has a remote-controlled auxiliary memory system that memorizes 4 million words. Its speed: The computor can multiply 12-digit numbers in less than 1/2000 of a second.

Use of packaged units holds repairs to the memory device to a minimum shutdown time.



Line grind band design is shown above. Cubical-shaped abrasive cutting edge makes slot width of about 0.080 to 0.125 inch, depending on amount dressed and wear-back

Line Grinding Solves Cutting Problems

Precision work with band machine permits grinding internal and external surfaces in vertical position. Removal of die section that is damaged is a frequent application

By H. J. CHAMBERLAND
Field Engineer
DoAll Co.
Des Plaines, Ill.

LINE GRINDING, a precision operation with a band machine, permits grinding internal and external contours in a vertical position. Advantages include unlimited cutting distance and a substantial depth of cut.

Line grind bands are made from special alloy steel. Cubical molded matrices or teeth of aluminum oxide or silicon carbide are welded to the band. Bands come in ⅞ and 1-inch widths, in grit sizes of 54 and 80. Grit choice depends on material characteristics. Both cut reasonably fast and produce excellent cut finish.

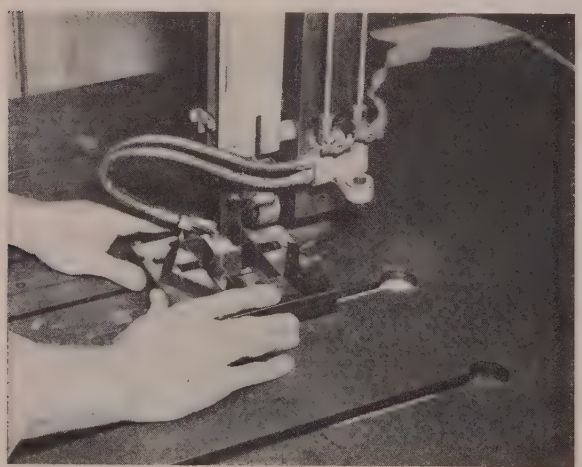
Die Repair — Aluminum oxide band is used to cut heat-treated, heat-resistant steels and wear-resistant nonferrous alloys. Frequent application is the removal of damaged die sections to install inserts. Savings are substantial; an expensive die can be salvaged in a few hours.

Silicon carbide band is used to cut glass less than 1 inch thick, some geological materials, plus certain types of alloys, such as Stellite, Discaloy, Ampco-24 bronze and others, when aluminum oxide grit doesn't provide desired free and cool cutting action afforded by silicon carbide.

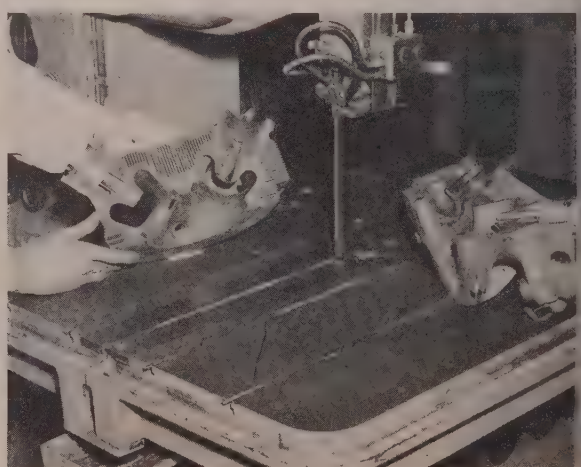
Recommendations — Band velocity of 5000 fpm has been determined as most efficient, generally speaking. However, certain factors often require band speeds as much as 1000 fpm above or below this figure.

Voluminous coolant facilities are a must in the line grinding of alloys. Coolants prevent loading of cutting edges or minimize thermal changes that could shatter glass, for instance.

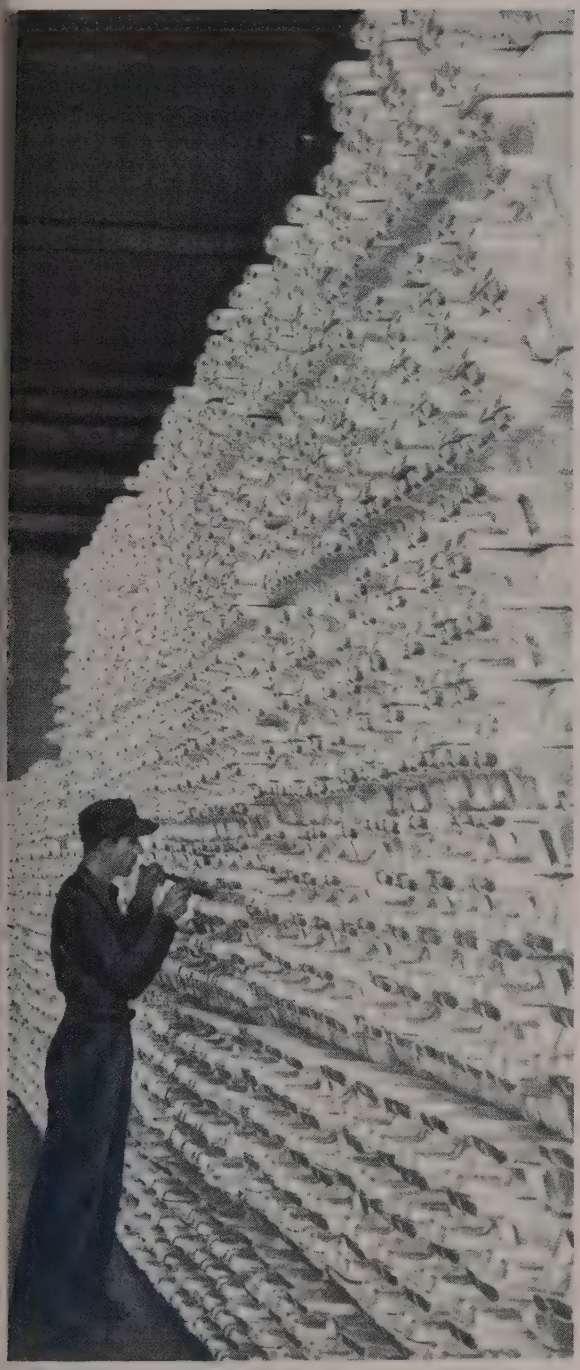
Band Life—Under normal operating conditions and proper use, the aluminum oxide band will have a life of about 40 sq in. on most hardened and heat-resistant steels. In some cases, the silicon carbide band has cut a total of 50 sq in. of Ampco bronze at the rate of 0.20 sq in. per minute. On 1-inch



Operation involves removing a broken section of hardened steel die with aluminum oxide line grinding band. The machine being used here is the all-purpose Contour-matic



Silicon carbide line grinding band provides solution in the cutting open of aircraft engine cylinder heads. The purpose is to make periodic checks of Stellite inserts



Millions of Americans will benefit

FROM MILLIONS MORE POUNDS OF

ALCAN ALUMINUM

The uses and the users of lightweight, long-lasting aluminum are many indeed—and are multiplying! Trouble is, even all the aluminum makers working at top speed haven't been able to produce enough to keep up with the demand.

That's one reason why American foundries and fabricating plants welcome the millions of pounds annually of Alcan aluminum that comes to them from Aluminum Company of Canada, Ltd., whose products we distribute. Alcan ingot is helping to provide employment for more than a million metal-workers, who are turning out the thousands of different aluminum products that are wanted by millions of Americans—for defense, industry, farm, and home.

To catch up with demand, Alcan in Quebec has constructed *additional* power and smelting facilities for producing 130,000,000 pounds of aluminum annually ...and in British Columbia, facilities for producing 200,000,000 *more* pounds will soon be in production.

ALUMINUM IMPORT CORPORATION

Distributing company of the **ALUMINIUM LIMITED** *group, in the Western Hemisphere*
Offices and agents in 40 cities *Cable address: ALIMPORT*
630 Fifth Avenue, New York 20 • 20 North Wacker Drive, Chicago 6 • 505 Terminal Tower, Cleveland 13
510 West Sixth St., Los Angeles 14 • Av. Ing. Luis A. Huergo 1279, Buenos Aires • Rua Da Quitanda 96, Sao Paulo

the 3rd. DIMENSION

May be the difference Between PROFIT and LOSS

Here's how *MicroRold*® Stainless Steel Saves You Money

The third dimension, or gauge thickness, is extremely important in the purchase and use of stainless steel. Job costs are figured on a square foot of stainless area basis while stainless sheets are purchased on a weight basis. Each one-thousandth inch saved in thickness saves 1.26 pounds per sheet.*

When sheets are ordered by gauge number, the permissible A.I.S.I. variation in thickness is plus or minus 10%. Thus, if you order 18 gauge you may receive sheets .052″ thick, when a thickness of .0475″ would suit your purpose. Using a standard 18 gauge 36″ x 120″ sheet as an example, the theoretical weight is 63.00 pounds, but this weight could permissibly vary between 59.22 pounds and 65.52 pounds.

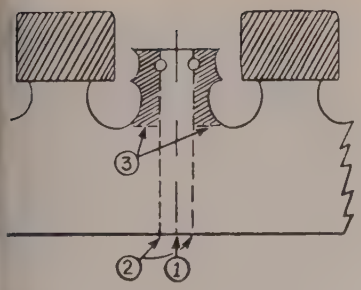
MicroRold sheets may be ordered by gauge number and you may specify they be rolled on the light side of the gauge range. This is true because the company's equipment is such that more accurate control of thickness is possible.

If you are not a user of MicroRold sheet it will pay you to get the full details. Your steel warehouse distributor will gladly tell you the MicroRold story.

**36″ x 120″ standard size sheet.*

WASHINGTON STEEL CORPORATION

Washington, Pennsylvania



elding recommendations: After re-oving segment with pliers, cut the and at (1); trim (2); remove shaded ea (3) which is the weld position. Af-r weld, anneal by shading blade; ing to dull red. Additional welds e needed for minimum blade loss

ass, the same band cuts at the ate of 0.50 sq in. per minute, with a average blade life of 300 sq in.

Dressing — Aluminum oxide ands require dressing before cut-ng. On occasion, dressing also required to prevent loading and o keep cutting at optimum produc-ion rates. Silicon carbide bands equire less frequent dressings. rains, though extra hard, are rittle and automatically break own to form new sharp cutting oints.

Diamond cluster or any conven-ional type wheel-dressing tool will erve to dress line grinding bands.

Dressing sides of segments with learance of 2 to 4 degrees will help increase cutting performance of aluminum oxide bands. Since his dressing operation will reduce thickness of matrices abnormally, it should be limited to line grind-ing jobs involving cuts of unusual thickness and length.

Like other types of saw bands, line grinding bands must be cut for internal grinding.

Case Histories—Applications go beyond die repair. After a con-tract shop hardened a 12 x 8 x 2-inch die, a sudden change in de-sign necessitated forming the rear side to a radius of 8 inches. Die, costing $250, was line ground in 25 minutes.

Die openings or other internal sections that shrink or close in heat treating are excellent applications. A gear-making specialty shop re-cently had a substantial quantity of gears with keyways closed to such an extent that management almost decided to scrap the lot. An-other shop line ground them to re-quired size in 12 hours. Saving was about $1200.

Since each band is limited to 8 welds before getting too short, sev-eral bands had to be used. Welding time and unnatural tool depreciation apparently accounted for a part of the repair cost.

Inspection — Another application is destructive inspection. In an air-craft plant, for instance, engine cylinder heads are periodically cut open to inspect fit of Stellite valve inserts. Silicon carbide band per-forms efficiently all through the cut, while an aluminum oxide band glazes rapidly upon reaching in-serts. Cutting time here is 1¾ hours.

Line grinding offers two major advantages in this respect. First, excellent finish obtained eliminates subsequent grinding. Second, cool grinding action preserves original hardness and other physical prop-erties of parts being cut.

Rods for Dense, Strong Welds

To meet demand for an oxy-acetylene welding rod for cast iron, applied without fusion of the base metal, that would combine dense welds and high tensile strength together with better ap-pearance, Eutectic Welding Alloys Corp., Flushing, N. Y., has devel-oped EutecRod 143FC.

This new flux coated rod (also available bare) contains special al-loying elements for greater strength and denseness of weld, along with an improved coating which results in smooth welds.

Product is said to permit a wide range of applications in railroad work, glass mold work, machine building work, and similar activi-ties where high strength and ap-pearance of the finished job take on high importance.

Flexible Shaft Valve Controls

Flexible shafting for remote con-trol of valves, together with a selector chart listing correct sizes for any valves, is the subject of a 16-page design manual published by Stow Mfg. Co., Binghampton, N. Y. Copies are available free of charge.

Process Control Package

Introduction of a series of indi-vidually engineered control sys-tems as packaged units to provide automatic control of various in-dustrial process operations was reported recently by the Minneap-olis-Honeywell Regulator Co.

Designed by the firm's indus-trial division in Philadelphia, the "packaged" units will be devel-oped to take advantage of the uni-formity among many process op-erations.

Each of these units, to be specially engineered for the specific proc-ess operation, will include record-ing and controlling instruments, measuring and control elements and related accessories. Complete instructions will be provided to fa-cilitate their installation without benefit of specialized skills.

Company engineers explain that many processes in either one or many industries have similar op-erations. For example, they cite batch cooking operations which are basically the same in the tex-tile, chemical, pharmaceutical and food industries.

The packaged systems will en-able a processor to select an in-strumentation system on the basis of over-all function. By conven-tional methods, lengthy considera-tion must be given to the charac-teristics of the individual control elements and their effect on the over-all operation.

Double End Doubles Work

Special automatic double-end ma-chine for processing aircraft land-ing gear cylinders of alloy steel is announced by Snyder Tool & En-gineering Co., Detroit.

Machine consists of two double-end machine sections placed side by side. Part is manually loaded and clamped in the fixture, which is loaded into one machine section and power clamped in position.

Operator selects proper tools and uses them in the required se-quence, alternating from one end of the part to the other. While an operation is being performed on one end, he is changing tools for the subsequent operation on the other end.

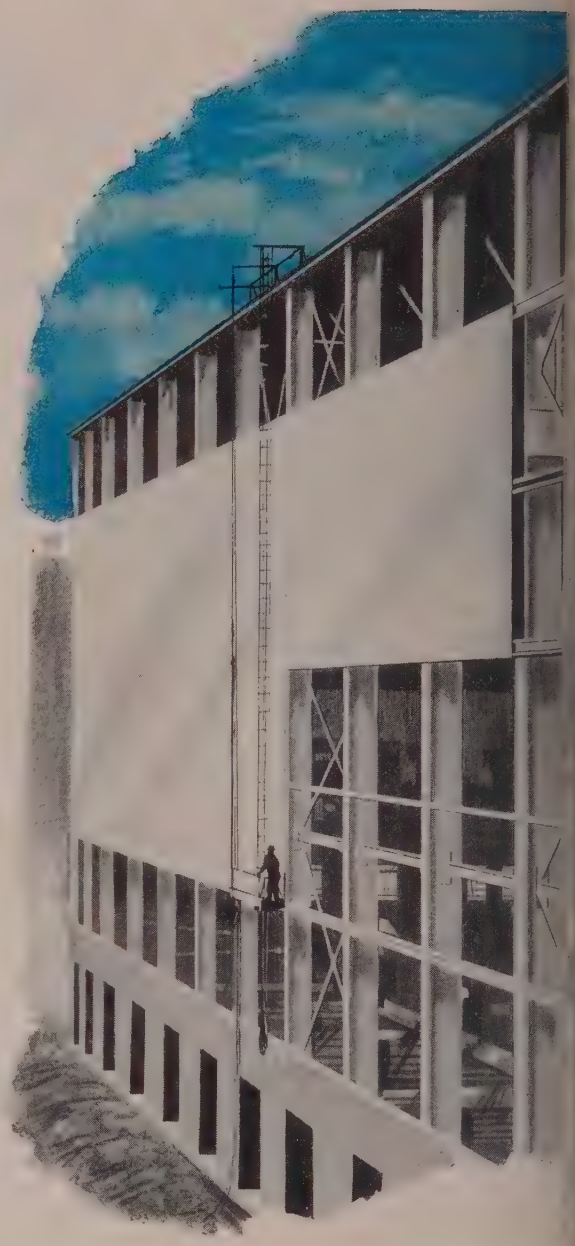
Aluminum is Why

4 men can erect 1500 sq. feet of wall per day

In Davenport, Iowa, there is a structure that building men from all over the country come to see and study. It is Alcoa's sheet and plate mill—the world's largest—covering 55 acres.

Most of the building is aluminum. Aluminum covers the steel framework and forms the walls. Modular panels of aluminum building sheet, enclosing glass wool insulation, were bolted to the lightweight steel framing. A minimum of scaffolding was needed to erect the 2 x 10-foot sections into place. The building was quickly enclosed.

Aluminum was used for all practical applications, especially to effect economy in maintenance.



ALCOA is How

For the building industry—suppliers, contractors and architects—Alcoa provides materials and experience. Taking their ideas and designs, Alcoa adds the wisdom of 65 years in producing and fabricating aluminum. A large architectural division at Alcoa acts as a storeroom of building information from which anyone can draw. And for fabricators of building products, Alcoa specialists gladly help with problems of making insulated panels, corrugated sheet and modular units of aluminum. Aluminum Company of America, 877-H Alcoa Bldg., Pittsburgh 19, Pennsylvania.

Alcoa Aluminum

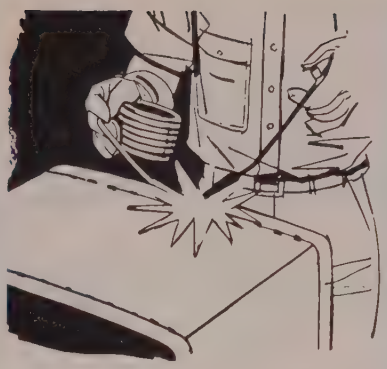
ALUMINUM COMPANY OF AMERICA

LIGHTWEIGHT DOORS and their hardware are made of aluminum by leading manufacturers. They are low in cost, durable and will remain attractive for a long time.

WINDOWS OF ALCOA® ALUMINUM are available from distributors everywhere. They never warp, crack or swell—are easy to operate and maintain.

BUILDINGS OF ALCOA ALUMINUM Roofing and Siding never need painting. Low cost, lightweight and easy to install.

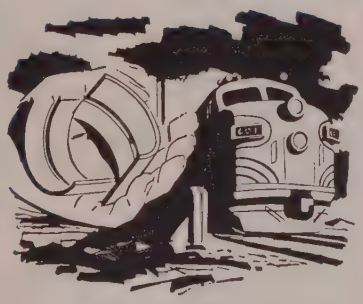
ALCOA ALUMINUM takes all finishes that other metals will take—plus gleaming, rust-resistant anodic coatings which are best on aluminum.



***FILLER METAL** of Alcoa Aluminum is available in many alloys for use in brazing, torch welding and arc welding. It is also packed suitably for automatic welding operations.

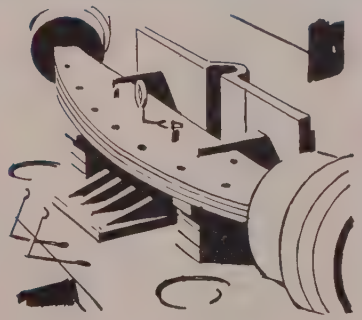
Products marked* are available from your local Alcoa Distributor listed here

***RIGID CONDUIT** of Alcoa Aluminum is the lowest cost corrosion-resistant, metallic conduit available. Its nonmagnetic properties improve electrical efficiency—its light weight speeds installation.



CORROSION-RESISTANT bearings of Alcoa Aluminum lower diesel maintenance. They are solid metal all through.

***SUBSTATIONS**—Substations built of lightweight Alcoa Aluminum Structural Rolled Shapes are quickly fabricated and erected. Aluminum's corrosion resistance eliminates current shutdowns for costly maintenance painting.



***TOOL AND JIG PLATE**—Forming and bending dies for aluminum shapes are economical when made of Alcoa Tool and Jig Plate. It is a cast product. Stress relieved, with close tolerances of flatness and surface smoothness.

ALABAMA
Birmingham
Hinkle Supply Co.

CALIFORNIA
Los Angeles
Ducommun Metals & Supply Co.
Pacific Metals Co., Ltd.
San Francisco
Pacific Metals Co., Ltd.

COLORADO
Denver
Metal Goods Corp.

CONNECTICUT
Milford
Edgcomb Steel of New England, Inc.

FLORIDA
Hialeah
Florida Metals, Inc.
Jacksonville
Florida Metals, Inc.
Tampa
Florida Metals, Inc.

GEORGIA
Atlanta
J. M. Tull Metal & Supply Co., Inc.

ILLINOIS
Chicago
Central Steel & Wire Co.
Steel Sales Corp.

LOUISIANA
New Orleans
Metal Goods Corp.

MARYLAND
Baltimore
Whitehead Metal Products Co., Inc.

MASSACHUSETTS
Boston
Edgcomb Steel of New England, Inc.
Cambridge
Whitehead Metal Products Co., Inc.

MICHIGAN
Detroit
Central Steel & Wire Co.
Steel Sales Corp.

MINNESOTA
Minneapolis
Steel Sales Co. of Minn.

MISSOURI
Kansas City
Metal Goods Corp.
St. Louis
Metal Goods Corp.

NEW JERSEY
Harrison
Whitehead Metal Products Co., Inc.

NEW YORK
Buffalo
Brace-Mueller-Huntley, Inc.
Whitehead Metal Products Co., Inc.
New York
Whitehead Metal Products Co., Inc.
Rochester
Brace-Mueller-Huntley, Inc.
Syracuse
Brace-Mueller-Huntley, Inc.
Whitehead Metal Products Co., Inc.

NORTH CAROLINA
Charlotte
Edgcomb Steel Co.

OHIO
Cincinnati
Williams & Co., Inc.
Cleveland
Williams & Co., Inc.
Columbus
Williams & Co., Inc.
Toledo
Williams & Co., Inc.

OKLAHOMA
Tulsa
Metal Goods Corp.

OREGON
Portland
Pacific Metal Co.

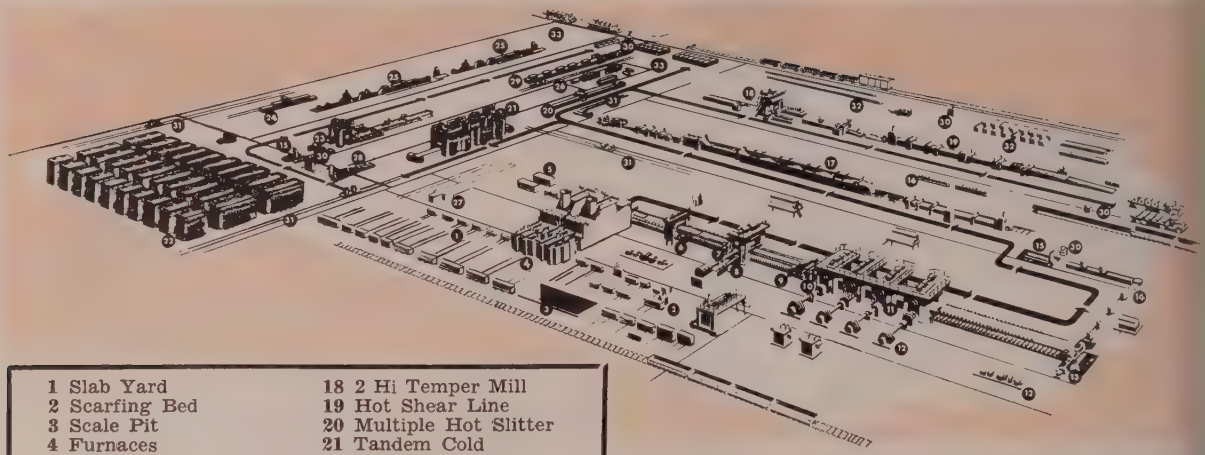
PENNSYLVANIA
Philadelphia
Edgcomb Steel Co.
Whitehead Metal Products Co., Inc.
Pittsburgh
Williams & Co., Inc.

TEXAS
Dallas
Metal Goods Corp.
Houston
Metal Goods Corp.

UTAH
Salt Lake City
Pacific Metals Co., Ltd.

WASHINGTON
Seattle
Pacific Metal Co.

WISCONSIN
Milwaukee
Central Steel and Wire Co.
Steel Sales Corp.



1 Slab Yard
2 Scarfing Bed
3 Scale Pit
4 Furnaces
5 Slab Reject
6 2 Hi Roughing Scale Breaker
7 Vertical Edger
8 4 Hi Reversing Rougher
9 Crop Shear
10 Pinch Roll Scale Breaker
11 4 Hi Finishing Stands
12 Motor Room
13 Coiler
14 Hot Coil Conveyor
15 Down Ender
16 Hot Coil Storage
17 Continuous Pickle Line
18 2 Hi Temper Mill
19 Hot Shear Line
20 Multiple Hot Slitter
21 Tandem Cold Rolling Mill
22 Annealing Furnaces
23 4 Hi Temper Mill
24 Multiple Cold Slitter
25 Flying Shear Line
26 Roll Shop
27 Roll Blast
28 Up Ender
29 Power Strapping unit
30 Platform Scale
31 Transfer Tracks
32 Hot Roll Shipping and Storage
33 Cold Roll Shipping and Storage

Area to right of No. 31 shows the three lines in the hot mill. Space to left of No. 31 includes cold rolling line under construction and annealing furnaces

Rolling Mill Is Tale of Two Cities

Steel slabs produced at Pittsburgh Steel's Monessen works are transported by barge 5 miles down Monongahela river to new hot strip mill at Allenport, Pa.

BARGES plying the 5 miles of Monongahela river waterway between Monessen and Allenport, Pa., these days are a key link in Pittsburgh Steel Co.'s novel integration program. They deliver steel slab, rolled at the Monessen works, to Pittsburgh's new $28 million 66-inch hot strip and sheet mill at Allenport.

Before integration, about two thirds of Pittsburgh's ingot tonnage went into seamless tube and wire products, with the balance being sold to the conversion industry. The expansion at Allenport within the next few months will put finishing facilities into balance with ingot capacity.

Long-range Plans — Allenport, part of Pittsburgh Steel's Program of Progress, hit the planning board in 1950. It dovetailed into three other over-all objectives at Monessen: 1. Increase of blast furnace output by 12 per cent. 2. Increase in open-hearth capacity by 50 per cent to 1,560,000 tons. 3. Construction of five new soaking pits and installation of a new 66-inch, high-lift, blooming-slabbing mill.

Allenport came under point No. 4—increase in finishing facilities by 82 per cent. All four phases of the program now are in the home stretch.

Facilities for cold rolling steel sheet at Allenport are expected to be in operation by latter 1953. This unit and the adjacent hot mill are scheduled for a capacity of 600,000 net tons per year. Looking to the future, the company also has made provisions to expand its hot mill with two more heating furnaces, two more finishing stands, a flying shear and a second coiler.

Allenport Works—Currently, the 4-stand United hot mill can produce strip at 1,770 fpm, and the rate will be stepped up when expansion is completed. Hot mill and other finishing facilities are housed in new buildings covering 350,000 sq ft.

Companion installations include 500-foot, continuous pickle line temper mill, shear line and shipping department. Electric power is supplied by a 132,000 v substation, which can furnish 40,000 kva. Water system, containing five miles of large and small diameter mains, can provide between 30 and 35 mililon gallons daily. Elaborate gas and oil pipe lines honeycomb the substructure to supply fuel and lubrication.

Dock to Furnace—Slabs are unloaded at a newly completed dock installation, where they are inspected, scarfed and placed in stock. Next move is to the magazine end of two Rust heating fu

These furnace operators

cut fuel costs, reduced cycle time with the LIGHTEST WEIGHT insulating firebrick

Here's "production-line" proof of actual savings made by replacing heavier brick with the lightest weight insulating firebrick made today—B&W IFB.

LARGE FORGE FURNACE
Comparative Furnace Tests

	Standard Firebrick	B&W IFB	Change With B&W IFB
Furnace Output, pieces per hour	70	100	Increased 43%
Heating-Up Time, minutes	210	35	Reduced 83.3%
Cycle Time, minutes	50	30	Reduced 40%

In addition:
Fuel consumption during heating up ..... Reduced 83%
Fuel consumption during operation ..... Reduced 50%

ANNEALING FURNACE
Comparative Furnace Tests

	Standard Firebrick	B&W IFB	Change With B&W IFB
Heating-Up Time, hours	52	31	Decreased 40%
Total Cycle Time, hours	131	114	Decreased 13%
Fuel Consumption, lbs./cycle	12,792	8,159	Decreased 36%
Yearly Output, tons	946	1,100	Increased 16%

MAGNESIUM MELTING CRUCIBLE FURNACE
Comparative Furnace Tests

	Ordinary Firebrick	B&W IFB	Change With B&W IFB
Fuel Consumption BTU/HR	1,000,000	500,000	Decreased 50%
Control	100 to 150 F overshoot of critical pouring temperature	no overshoot of critical pouring temperature	

What's behind these remarkable records of B&W IFB? Light weight for one—in fact B&W IFB is lighter in weight than any other insulating firebrick. This means they store and conduct less heat, provide faster heating-up time and lower fuel consumption. These brick also respond rapidly to changes in heat input, assuring excellent temperature control.

Get all the facts on B&W Insulating Firebrick from your local B&W Refractories Engineer. He may be able to point the way to lower production costs for you.

R-463

B&W REFRACTORIES PRODUCTS—B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars

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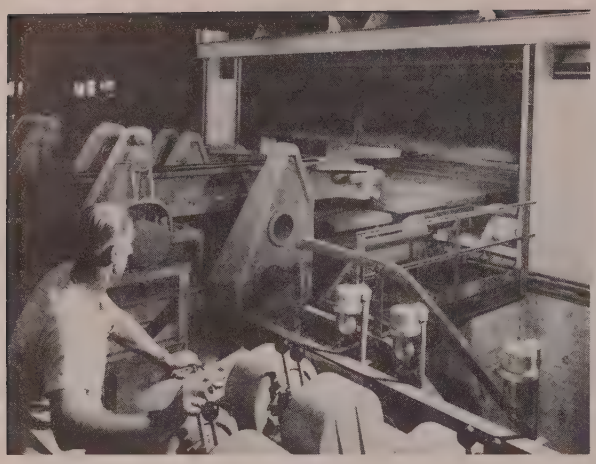
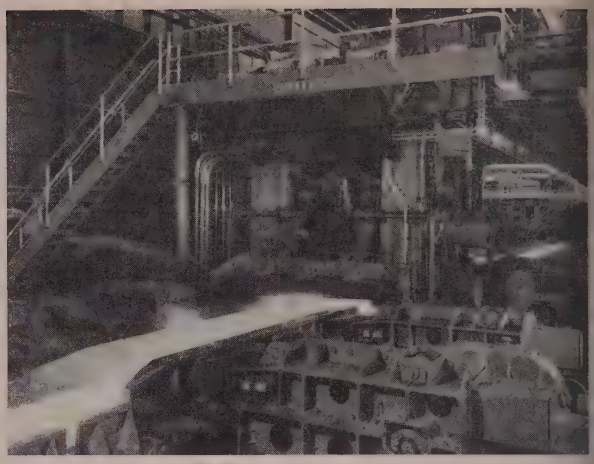


Slabs, moved by crane to a magaz'ne feeder, are charged into heating furncce one at a time by pusher. Heat ranges from 1650°F at entry to about 2400° at exit



In five passes, reversing rougher reduces slab thickness by about 90 per cent. A 20-foot slab entering the mill emerges nearly 200 feet long in about one minute

naces. Each slab, fed by an automatic pusher, goes to a designated skid according to schedule.

The triple-zone gas furnaces are 22 feet wide by 80 feet long. Each furnace has two sets of water-cooled skids. Burners at top and bottom heat slabs to rolling temperature at about 160-tons of cold steel per hour. Temperature ranges from 1650°F at entry to 2400°F at discharge.

Furnaces have precision control. Temperature of the steel is checked by radiation-type pyrometers as slabs are discharged from furnaces to roller tables. Usual slab heat is 2200°F.

Reversing Rougher—After leaving the furnace, each slab passes through a 2-high scale-breaking stand. Loosened scale is removed by simultaneous application of water under pressure of at least 1000 psi on both sides of the slab.

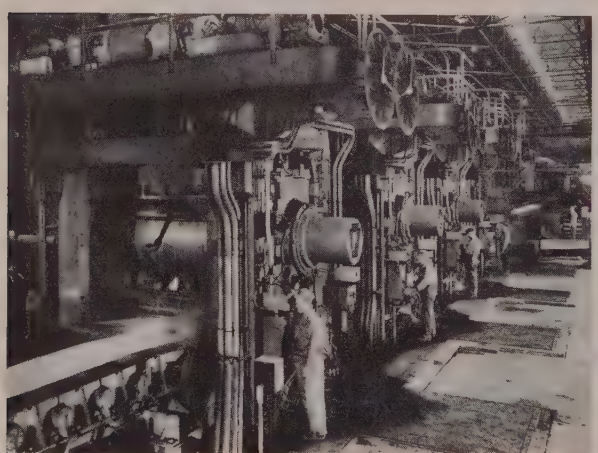
Descaled slab goes to the reversing rougher, which is driven by two GE 3000 hp motors. Its two working rolls are about three feet in diameter. Two back-up rolls are more than four feet in diameter.

In five passes, slab is reduced about 90 per cent in thickness—from about 5 inches to ½ inch. Vertical edging rolls maintain constant width. When the operation is completed, slab temperature is checked by a recording and indicating pyrometer. Second scale-breaking unit just ahead of the 4-stand tandem mill descales and cleans after a crop shear cuts off fish tail.

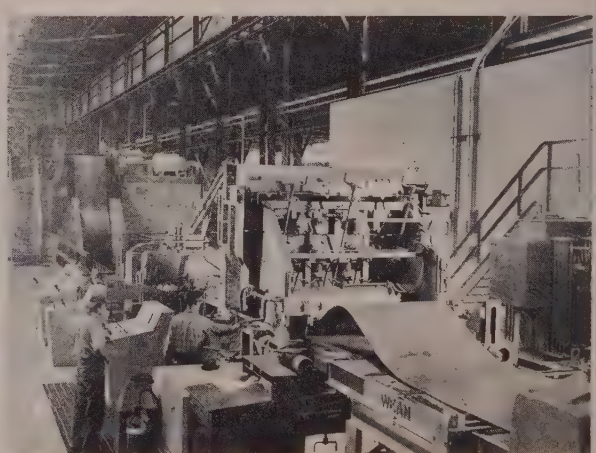
More Speed—Operators in enclosed pulpits then start the hot slab into the first of four 4-high finishing stands, which are in tandem. Each has two working rolls, driven by a 4000 hp motor, and two backups. Stands are 18 feet apart from center to center.

Sheets emerging from the final stand at speeds up to 1770 fpm are cooled by water while en route to the coiler. Finished coils are placed on endless conveyor and carried to coil storage for further cooling.

Continuous Cleaning — Coils



Sheet comes off delivery end of finishing train at speeds up to 20 mph. Slab 5 inches thick by 20 feet long is reduced to 1/16-inch strip by ¼ mile long



Strips at entry end of 4-tank pickle line may be either welded or stitched. Average speed for the pickle line is from about 275 to 300 fpm on regular low carbon steel

ver-all view of motor room at the llenport plant. Large unit mounted platform is 6000 hp, twin-drive otor for the reversing rougher

lated for further processing are reated in a Wean continuous ickle line. About 40,000 tons of heet, 20 to 60 inches wide, can e cleaned, trimmed and oiled each nonth.

Coils first are fed into a processor, which bends sheet backward nd forward sharply over a series of five small rolls. This loosens scale and levels at speeds up to 1000 fpm. After coil ends are sheared, they are either welded or stitched end to end.

From the looping pit, the strip is fed into pickle tanks—line has four—which are 70 feet long. They are made of ⅜-inch steel and are rubber lined, with three courses of acid-resistant brick to protect rubber.

Immersion time at top speed averages about 45 seconds. This permits an average pickling line speed of about 275 to 300 fpm on regular low-carbon steel. Sulphuric acid pickling solution is held at 205°F.

From the acid tanks the strip passes through wringer rolls, cold-water rinse, hot-water rinse, second set of wringer rolls and a hot-air dryer. After shearing to coil length, steel is oiled and recoiled. Coils, weighing up to 30 tons, have maximum diameters of 6 feet. Scrap balers under floor level dispose of scrap.

Hot Finish—Hot mill includes a Bliss 2-high temper mill and a hot shear line.

Temper mill, operating at speeds up to 1340 fpm, gives the steel a slightly harder skin than core.

Hot shear line is built to side trim, level and cut sheets to lengths of 3 to 30 feet on a flying shear. The roller leveller in the line has 17 levelling rolls with back-up rolls. An oiling machine coats steel to prevent corrosion in shipment.

Sheet widths run from 20 to 60 inches. Thicknesses, controlled by x-ray gage, range from 0.065 to 0.188 inches. Most steel is in low carbon grades—rimmed steel with less than 0.25 per cent carbon and less than 0.60 per cent manganese. Capped, semi-killed and killed also will be rolled.

Over-all Picture—When the cold rolling installation is completed, a large percentage of pickled coils will be fed directly to the Bliss 4-stand, tandem cold mill for further reduction. Other equipment will include a battery of annealing furnaces, temper mill, a complete shear line, slitter, etc.

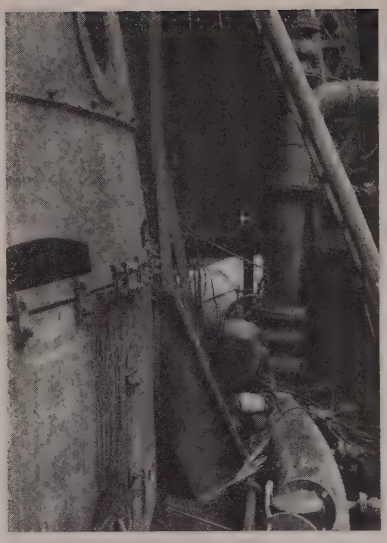
Nearby, at Allenport, are Pittsburgh Steel's facilities for producing oil country pipe and seamless tubular goods.

Furnace Grows Six Feet

THERE'S more than one way to get added production out of a blast furnace, and engineers at John Lysaght's Works Ltd., Scunthorpe, N. Lincolnshire, England, successfully used one of them. They lifted the stack and added a 6-foot section to the hearth.

Believed to be the first enlargement of its kind in Great Britain, the No. 4 stack was entirely stripped, cut with burners, and lifted bodily to receive the addition to its 17-foot hearth.

First Move—Erectors first cut a 6-foot square hole in the base of the steel shell to facilitate the entry of girdering and equipment. From heavy foundations, built to bear the 50 some odd tons of the whole furnace stack as it was raised, a steel girder framework was erected, and, at the level of



Ticklish part of the job was raising top of the furnace after cutting it off at hearth level. Despite high winds, lifting was accomplished without incident and 6-foot section added

the lintel-plate, just over 30 feet from the ground, a platform was laid.

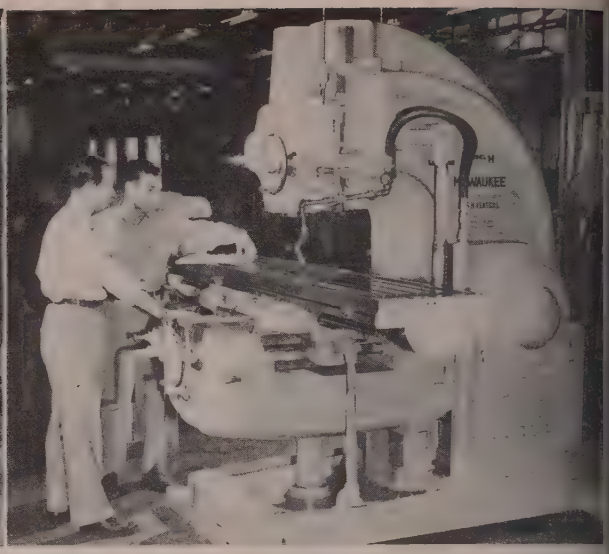
The girdering reached well out of the furnace top to hold up the four gas mains which had to be cut before the shell was raised. On the lintel-plate platform, and resting on eight hydraulic jacks, four heavy 9-foot steel beams were erected and welded or bolted to the furnace wall.

Cutting and Raising—Next step was the actual slicing through the furnace casing at a point just above the lintel-plate by oxy-acetylene burners. This done, the structure was raised the necessary six feet by the jacks. Nearly a dozen engineers and skilled erectors were employed in the lifting operation which was carried out in shifts in less than a week.

It is interesting to note that the project was carried out during the time when the February gale-force winds were at their height, yet the job of first bolting and then welding the new plates took place without incident.

The extra six feet in hearth height will mean an increase in the working volume of the furnace of about 12 per cent. It is also expected that the enlargement will add considerably to the furnace's efficiency and weekly average output of iron.

Machinist scrapes down a machine in-the-line at the Wichita plant's five-station rebuilding shop. Spindles are aligned after ways are restored to fine tolerances



Each machine is carefully tested and checked before it leaves shop. Units are completely dismantled and reconstructed exactly as they were built by manufacturer

Making the Old Good as New

Year-round machine tool rebuilding program at Boeing pays off in savings running from six to seven figures. Work is handled by crew of 32 men

PRODUCTION of 32 men at Boeing Airplane Co.'s Wichita, Kans., plant accounts for yearly savings running into six or seven figures. This pocket-size crew is responsible for the company's machine-tool rebuilding program.

Working on a scheduled, production-line basis, they rebuilt 144 machines in 1952. Savings, based on 1942 replacement costs, were $537,431 or $1,662,086 if current costs are the norm.

Dividing the number of machines rebuilt (144) by the $151,487 rebuilding cost (labor, $120,242; materials, $31,245), you arrive at an average rebuilding cost per unit slightly in excess of $1000.

Cycle—Under its permanent rebuilding program, Boeing estimates each machine in its plant will be reworked every four years. From 11 to 15 machines are in the shop at all times. To prevent interference with production schedules, machines are pulled off the line only when they aren't needed or standbys are on hand to take their place.

Once in the shop, each machine is completely dismantled and reconstructed exactly as it came from the factory. Contact surfaces are restored to close tolerances, and every rebuilt machine is standardized, so parts can be interchanged on like machines

Shop Setup — Ten-ton crane moves machines within the five-station shop. One group dismantles, another does the scraping, a third overhauls gear boxes and transmissions, a fourth reassembles and tests, and the final crew paints.

Standard methods are used to restore ways and align spindles.

Restoring Ways—Way surfaces are coated thinly with red lead; then checked for high spots with a master straight-edge that has been coated with India red oxide. Scraping is the next step. Both operations are repeated until true surfaces are restored.

Whenever possible, original tolerances are restored by using phenolic ways. In this operation, at least 3/16 inch of the metal is removed.

Alignment — Maintenance-machine men start alignment by grinding or honing the inner surface of the spindle to a precise taper.

When spindles and columns are in alignment and ways are restored, machine shop inspectors take over. On a milling machine for instance, they run a series of 58 exacting tests. Rigid specifications have been established for the allowable amount of wobble on the spindle and at certain points on the arbor. Similar specifications govern all other measurable factors.

When a machine tool comes off the shop line, it's as good as new, say Boeing engineers.

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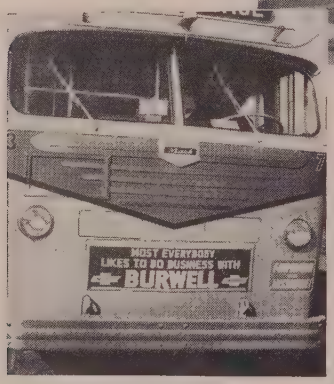
ANNEALING LINE

Gets lasting paint adherence ...PLUS LOWER PRODUCTION COSTS

The Yarder Manufacturing Company, Toledo, Ohio, uses Electro Paintlok for a lasting enamel finish on their "Road King" signs and frames for traveling posters on buses, street cars, trucks and taxi cabs.



● Republic Electro Paintlok affords this manufacturer of outdoor signs and advertising frames production economies while adding years to the life of his product.

When Electro Paintlok was adopted in place of plain steel, an 8% reduction in costs resulted. Less current was needed to spot weld Electro Paintlok. The use of special welding points was eliminated. Point cleaning was reduced. Electro Paintlok was spot welded at a faster rate. Prior to applying baked-on enamel, Electro Paintlok required only one simple cleaning to remove dirt acquired during storage and fabrication.

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Lazy Gas Turned Workhorse

New Houston plant turns out argon for ever-increasing list of industrial jobs

ARGON, a fabulous "lazy" gas that has gone to work for industry, is now being commercially extracted at the Houston Oxygen Co.'s $1 million plant in Houston.

The colorless, odorless, and tasteless gas that is present in every breath of air we take, is now being bottled in a large scale production for specialized welding of stainless steel, aluminum, magnesium, titanium, copper and carbon steel. The gas is also used for filling light bulbs, fluorescent and neon tubes.

Small Proportion—Since the atmosphere contains 0.9 per cent argon, it is a matter of rectifying the

IT TAKES CONSTANT CHECKING . . . *to get 99.92 per cent argon*

air and breaking it up into its components which are principally nitrogen, oxygen and argon. Air is filtered and compressed through five stages to 2350 psi. As it passes through an expansion engine, the air is reduced in temperature to 170° C. From there it goes into a huge rectification column where it is liquefied and broken down and the components are removed at various levels.

Argon Refining — Crude argon gas goes through the tower a second time before it is poured into a giant balloon suspended from the three-story ceiling. From there it

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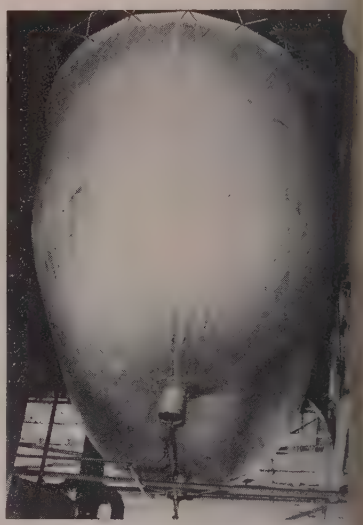
is funneled to the purifying plant.

The first two refining processes remove all but a trace of oxygen. The final step sends the impure argon into a furnace where hydrogen is introduced to combine with the oxygen to form moisture which is drained off. This leaves the argon 99.92 per cent pure, in its most refined state.

Wide demand stems back only to 1894 when Lord Rayleigh and Sir William Ramsay isolated argon



ARGON STORED IN THIS BALLOON
. . . awaits purity recycling

gas. Because it is so complete inactive and there are no known compounds of the gas, it was named from the Greek argos which means "lazy".

Real Future—But the discoverers did not visualize the uses that would be found for argon. Its largest potential use now is in welding where it is flowed over the electric arc to exclude chemically active gases from contact with the molten metal. Inert gas metal-arc welding has several advantages such as a greater adaptability to welding the aluminum-zinc alloys, higher welding speeds, ability to weld thicker material and less distortion.

Ease of welding with inert gas has also played a large part in its increased use in the last few years. Sound welds of good tensile strength and ductility are produced in a minimum of time.

Greater Use — Special welding machines have been developed that automatically, by solenoid operated

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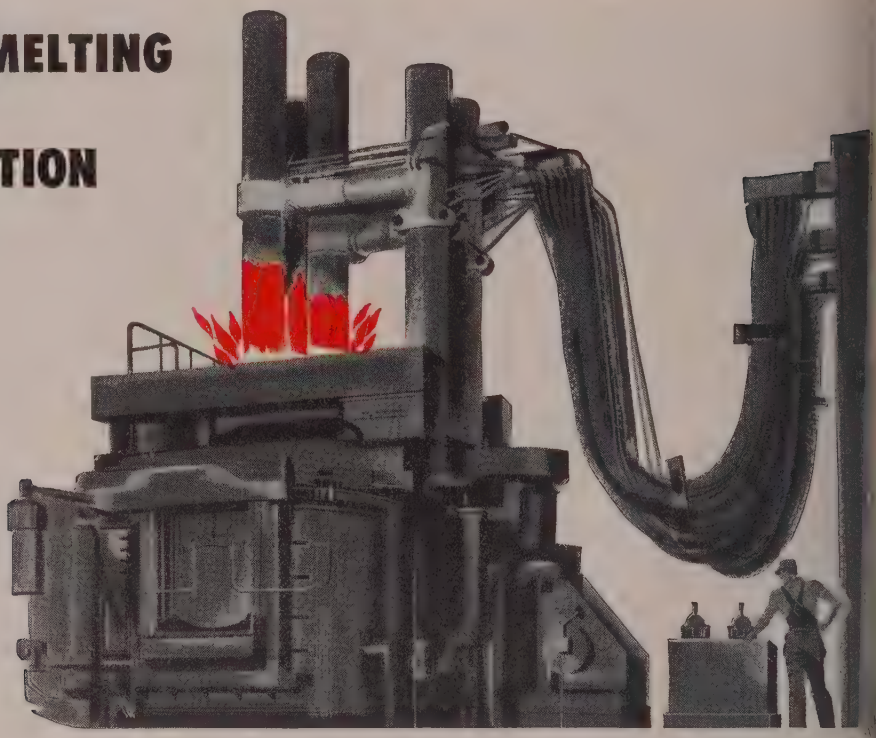

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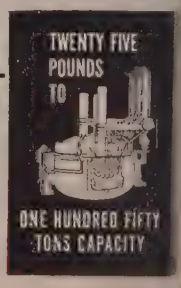
*REG. T. M. U. S. PAT. OFF.

WHEN YOU MELT... MOORE RAPID Lectromelt



...es, control the flow of gas to th tip of the tungsten electrode. ...fter the arc is broken, a time de...y in cutoff of gas and cooling w...er (used with the higher cur...s) can be pre-set to any period o... time up to one minute. This m... ntains water and gas circulation t... provide complete cooling as well a... protection to the electrode.

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Everything Recorded — Seven ...mber 14 conductors were pulled ...rough standard lengths of ¾-...ch conduit. Minimum pull to ...ove the conductors, and constant ...ll in pounds were recorded for ...e new duct and the five other ...rands. While minimum pull for ...e latter ranged from 70 to 100 ...ounds and constant pull reached ... high of 145 pounds, the Xduct ...ecorded figures of 40 and 80 ...ounds respectively.

Inner surface of the new con...uit, beyond the reach of wrenches, ...ises and abrasive materials, is ...rotected against corrosion by a ...aked-on coating of an aluminum ...namel, developed through ex...haustive research for important ...overnment defense projects. Re...sulting inner surface of Xduct con...duit assures minimum friction when fishing wires and cables through the conduit.

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Security Locknuts are vibration proof. They are installed like an ordinary nut. Nothing to adjust—no extra parts—no holes to weaken rods or bolts—nothing to shear—and a Security Nut does not require bolt tension to hold it. It stays "put" where you wrench it at any point on the bolt.

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Challenge us to solve your toughest fastener problem and ask to see these tests. *Send the coupon.*

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Here is a cap nut that locks with the grip of the Security Locknut. It provides locking power at a cost no more than an ordinary acorn nut. Here is the answer to those locations where you want to be sure that protection for bolt ends stays there.

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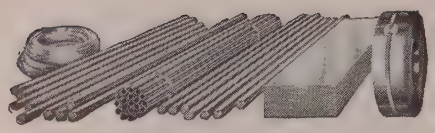

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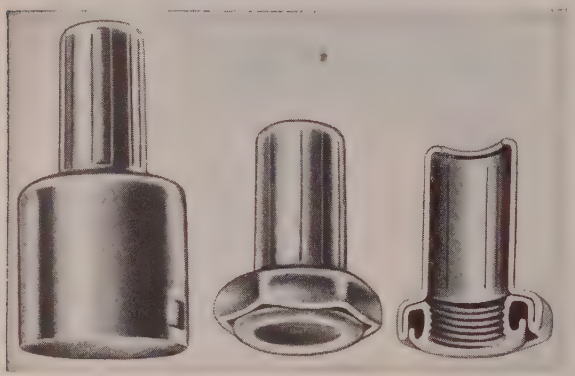


Making this special nut from strip metal economically and in large quantities, called for highly skilled tool designing and a thorough knowledge of metalworking. All products on this page through the courtesy of The Risdon Manufacturing Company, Naugatuck, Conn.

Imagination Unlimited Lowers Cost of Strip Metal Components

Rising costs of labor and materials should not necessarily lead to increased prices of fabricated items. Imagination unlimited, the utilization of existing automatic machines, and clever tool designing are often the answer to offsetting increased costs.

Cost savings can sometimes be accomplished by making a one-piece item from a two-piece assembly, or by changing from a casting or a screw machine item to one made from strip metal, tubing or wire. Or savings may be obtained through the elimination of costly secondary operations or the reduction of scrap losses.

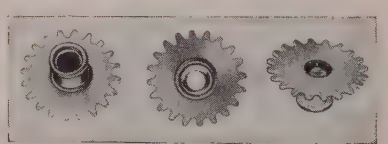
Automatic multi-station slide and eyelet machines have wonderful possibilities for cost saving for quantity items of limited size. A coil of strip metal is fed into one end of the machine and the finished items come out at the opposite end after it has undergone a large number of exacting operations. Speed, close tolerances, low scrap losses and economy are associated with these methods.

Strip Metal Nut Replaces Screw Machine Piece

The item illustrated above was originally made from hexagon rod and involved a number of operations such as machining, considerable drilling and threading. In redesigning this component from strip metal, 16 operations were involved, each of which had to be accurately planned so that a single annealing was required. After the draw, the metal was folded back against itself. It was then redrawn and folded back against itself after a clipping operation. Such a large amount of coldworking requires a thorough knowledge of the flow of metal in dies. Once perfected, the finished article is strong and considerably lighter.

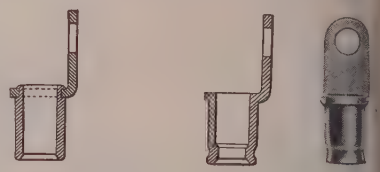
Making One-Piece Components

In small gears, concentricity between the pitch diameter of the gear teeth and the inside diameter of the bore is important. Originally the gear shown below was designed to be made in two pieces — a bushing and a gear blank assembled in a staking operation. When made in one piece from strip metal, this part was improved because it was uniform and concentric.



This improved, one-piece sheet-metal gear was originally made by staking two parts.

The following electric terminal was formerly a two-piece item made by assembling a screw machine bushing and a stamping. On making this complete in one piece from strip metal, savings were made in labor cost and material, although it involved an intricate set of dies and the use of an automatic multi-plunger machine.

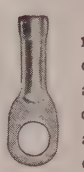


Complete one-piece terminal made from strip brass in a single automatic multiple plunger machine.

Eliminating Drilling, Milling

This piece was formerly turned from tubing. A secondary operation was necessary for milling the slot. When converted to strip metal, it was made complete on an automatic press. The four slots were developed by piercing the metal in the blank and the finished piece was formed by redrawing.

Produced from Coiled Tubing



Formerly this terminal was made from tubing which was cut to length, formed, swaged and pierced, each in a separate operation. In the new method all of these operations were combined. Coiled tubing was fed into an automatic multi-sliding machine that produced the complete part.

Bridgeport Technical Service

High-speed, automatic operations call for material made to exacting specifications and uniformity. Not only must the metal be free from imperfections but special physical properties are needed to withstand the severe coldworking operations which are performed without any intermediate annealing. Bridgeport Brass Company is well qualified to supply copper-base alloys to meet the exacting requirements of metal goods fabricators. All processes are under strict laboratory control. Please contact your nearest Bridgeport sales office and we will gladly help you with your metal problems and requirements. (439)

CAUSES OF CORROSION

The article is one of a series of discussions by J. Bulow, corrosion metallurgist of the Bridgeport Brass Company.

COPPER ALLOYS versus SODIUM CHLORIDE SOLUTIONS (Cont.)

Corrosiveness of Sodium Chloride at Room Temperature

Because of the common occurrence of sodium chloride corrosion of metals, we have determined the relative corrosion resistance of copper and a number of copper alloys in 2N sodium chloride solution at room temperature. This list is far from complete. Copper alloys especially developed for sea water, etc., will be described in this column later.

The depth of localized corrosion at the water line was calculated from the loss in tensile strength. The greater depth of corrosion at the water line is due to the effect of oxygen on the corrosion in sodium chloride solution and indicates the maximum corrosion which is generally anticipated at room temperature in the absence of corrosion inhibitors.

It should be noted that the straight copper-zinc alloys containing up to 80% copper are more subject to localized corrosion at the water line. Most of the difference is due to dezincification. The addition of lead to brass such as the 60% Cu 40% Zn type of alloy does not change the corrosion resistance to any great extent but the addition of tin and/or arsenic have the greatest beneficial effect at 80°F and lower.

Higher Copper Alloy More Resistant

It is evident that where the maximum corrosion resistance is needed for exposure to sodium chloride solutions, those copper-zinc alloys containing 85% or more copper, or a modified copper-zinc alloy should be used as shown in the table.

The addition of other alloying elements to copper such as tin, aluminum, and silicon while increasing the strength and having other desirable benefits, does not materially change the corrosion resistance towards sodium chloride solution at room temperature. Most of these alloys are equal to or somewhat superior to copper in sodium chloride solutions. Their higher strength can often be used to advantage without fear of the alloying having an adverse effect on the corrosion resistance.

Water Line Corrosion of Copper and Copper Alloys in 2N Sodium Chloride Solution at 80°F, ±5° (249-day test)

Copper-Zinc Alloys	Depth of Corrosion Based on Loss in Tensile Strength	Loss in Weight
100% Cu	.00376 ipy	.00218 ipy
90% Cu, 10% Zn	.00376	.00126
85% Cu, 15% Zn	.00174	.00069
80% Cu, 20% Zn	.00564	.00062
70% Cu, 30% Zn	.00578	.000516
60% Cu, 40% Zn	.00997	.00132
Modified Copper-Zinc Alloys		
61% Cu, 39% Zn, ¾% Sn	.0029 ipy	.00037 ipy
61% Cu, 39% Zn, ¾% Sn, 0.07% As	.00145	.00026
61% Cu, 35.9% Zn, 3.1% Pb	.00867	.000355
59% Cu, 38.6% Zn, 2.09% Pb, 0.3% Sn	.00507	.000383
Bronzes		
100% Cu	.00376 ipy	.00218 ipy
98.7% Cu, 1.3% Sn	.00737	.00336
98.3% Cu, 1.7% Sn	.00448	.00266
95.0% Cu, 4.7% Sn, 0.3% P	.00708	.00266
98.1% Cu, 1.9% Si	.00318	.00168
97.1% Cu, 2.9% Si	.00274	.00157
96.0% Cu, 3.1% Si, 0.9% Mn	.00622	.00116
90.7% Cu, 2.1% Si, 7.2% Al	.00419	.00271
97.1% Cu, 0.4% Si, 2.5% Al	.00318	.00291

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Self-Cleaning Collet is said to prevent coolants and cutting oils along with chips they pick up from collecting and clogging in collet slots. Inclined planes on the following edge of each slot face act as fan blades which forcibly repel foreign matter. **No. 1319**

Automatic Wrench is said to adjust automatically by ratchet action to fit any ¼ to 1¼-in. nut. Head rotates approximately 130 degrees on end of handle, and knurled jaws open or close depending upon direction of turn. Grip tightens as pressure is applied. Tool is forged chrome vanadium steel. **No. 1320**

Tube and Bar Printer is said to imprint codes, trade marks and inspection data continuously on any length round, hexagon or square bar or tube stock. Models available from ½ to 6-in. diameter. Printing rolls move automatically at speed of stock however fast it is fed. Handwheel raises or lowers printing rolls to accommodate varying shapes. **No. 1321**

Portable Power Pipe Threader weighing 26 lbs. utilizes ring gear principle to turn dies, and is said to thread ¼ to 4-in. pipe. All popular types of hand die stocks are adaptable to the unit and can be quickly mounted. ½-hp, 110-v ac or dc electric motor supplies proper cutting speed and removes unit from finished threads with a flip of toggle switch. Needs only 12-in. working area, so stationary pipes can be threaded in place. **No. 1322**

Polishing and Buffing Lathe features a 10-hp motor and incorporates variable speed drive from 1500 to 3000 rpm. Speed is said to be changed instantly while lathe is turning by moving a dial control. **No. 1323**

Rotating Vise provides complete rotation of 360 degrees in any direction to give more flexibility than conventional or swivel types. Is reported to make the scope of work performable in machinist's vise practically unlimited. **No. 1324**

"V" Link Belting Tool is said to simplify attaching or detaching v-belting. Prong type tool operates by applying pressure and inserting ends of prongs into standard slots or v links. A twist opens slots so that rivet heads can be slipped in or out to make or break connections. Operates in seconds. **No. 1325**

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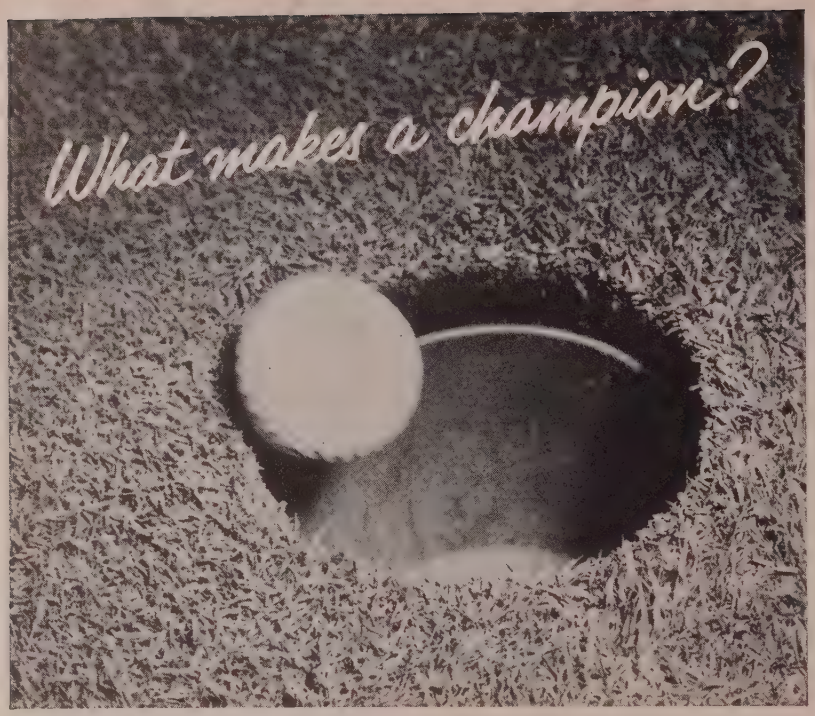

The requirements for championship in golf are rigid:

- a genuine interest in the game
- ability to apply proved techniques
- practice-perfected skill
- proper equipment

The requisites are the same in our game. When you select an industrial contractor, you want a company which is keenly interested in doing an outstanding job—has a broad knowledge of the best techniques—is thoroughly experienced—employs the most modern equipment.

The CCC team is proud of its qualifications and accomplishments—of the long list of clients it has served not once, but many times.

Just as any good golfer welcomes the chance to compete, so this industrial team welcomes the opportunity to bid on any project involving one or more of the many CCC services.

• **General Construction** • **Building Alterations** • **Demolition** •
• **Foundations** • **Press Erecting** • **Machinery Moving** •
• **Crane and Conveyor Installing** • **Equipment Warehousing** •
• **Steel Fabricating** • **Export Packaging** •

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CALENDAR
OF MEETINGS

August 17-19, Society of Automotive Engineers International West Coast meeting, Georgia hotel, Vancouver, B. C. Society address 29 W. 39th St., New York 18. Secretary John A. C. Warner.

August 19-21, Institute of Radio Engineers Western electronic trade show and convention, Civic auditorium, San Francisco. Business office: 1355 Market St. San Francisco 3. Business manager: Heckert Parker.

August 23-26, National Automatic Merchandising Association: Annual convention and exhibit, Hotel Conrad Hilton, Chicago. Association address: 7 S. Dearborn, Chicago. Secretary: C. S. Darling.

September 1-4, American Institute of Electrical Engineers: Pacific general meeting, Hotel Vancouver, Vancouver, B. C. Institute address: 33 W. 39th St., New York 1. Secretary: H. H. Henline.

September 2, Steel Kitchen Cabinet Manufacturers Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: 1008 Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany Jr.

September 4-13, European Machine Tool Exhibition: Brussels, Belgium.

September 6-11, American Chemical Society: Fall meeting, Hotel Conrad Hilton, Chicago. Society address: 1155—16th St., NW, Washington 6. Assistant secretary: R. M. Warren.

September 9, Material Handling Institute: Fall meeting, Hotel Cleveland, Cleveland. Institute address: 813 Clark Bldg., Pittsburgh 2. Managing director: R. Kennedy Hanson.

September 9-11, Compressed Air & Gas Institute: Fall meeting, Fishers Island Country Club, Fishers Island, N. Y. Institute address: 122 E. 42nd St., New York 17. Secretary: Frank P. Anderson.

September 10-12, Rocky Mountain Management Club: Rocky Mountain industrial exposition, University of Denver arena. Club address: 1031 15th St., Denver 2. Executive secretary-treasurer: Harold S. Craig.

September 11-13, Metal Powder Association: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 420 Lexington Ave., New York 17. Secretary: Robert L. Ziegfeld.

September 13-16, Electrochemical Society Inc.: Fall meeting, Ocean Terrace hotel, Wrightsville Beach, N. Carolina . Society address: 216 W. 102nd St., New York 25. Secretary: Dr. Henry B. Linford.

September 13-16, American Institute of Chemical Engineers: Fall meeting, Hotel Fairmont, San Francisco. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

September 14-15, American Machine Tool Distributors Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thomas H. Fernley Jr.

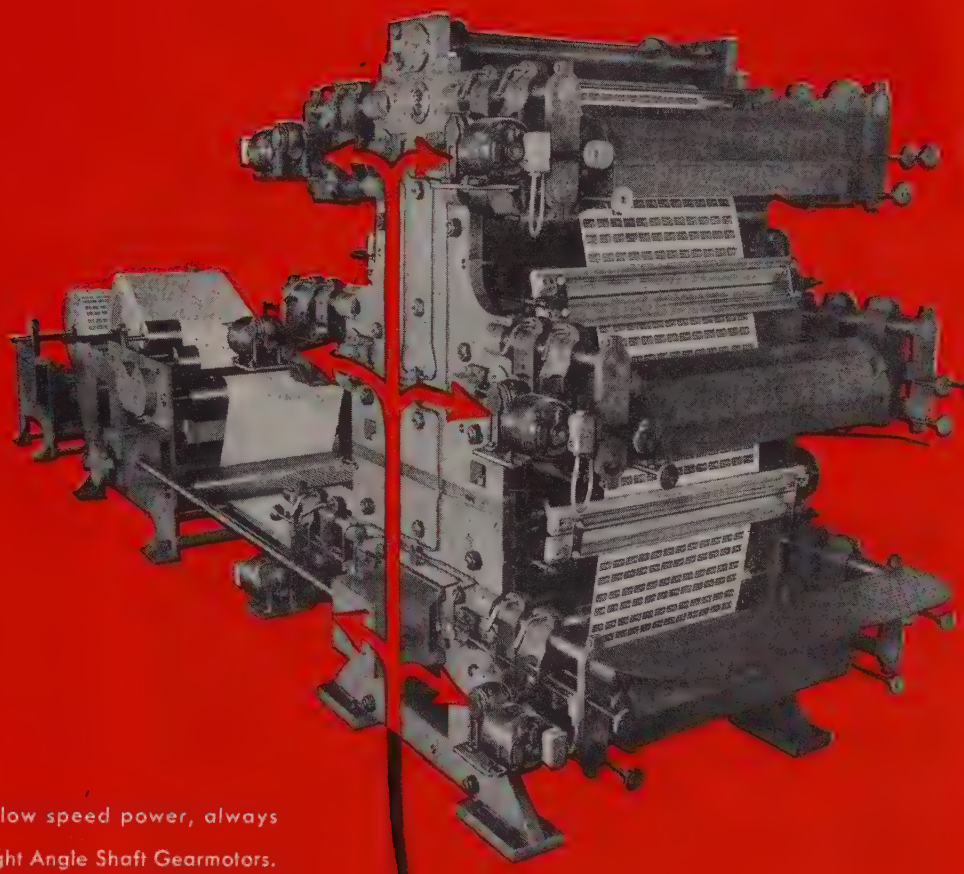
September 14-15, American Hot Dip Galvanizers Association Inc.: Semi-annual meeting, Statler hotel, Cleveland. Association address: 1506 First National Bank Bldg., Pittsburgh 22. Secretary-treasurer: Stuart J. Swensson.

September 14-16, Allied Railway Supply Association: Annual meeting, Hotel Sherman, Chicago. Association address: 1200 E. Chase Ave., Chicago 26. Secretary: Charles F. Well.

September 16-18, Porcelain Enamel Institute: Shop practice forum, Ohio State University, Columbus, O. Institute address: 1346 Connecticut Ave., NW, Washington 6. Secretary: John C. Oliver.

September 17-18, National Foundry Association: Annual meeting, Plaza hotel, New York. Association address: 53 W. Jackson Blvd., Chicago 4. Executive secretary: Charles E. Sheehan.

September 18-19, American Ceramic Society: Refractories Division meeting, Bedford Springs Hotel, Bedford, Pa. Society



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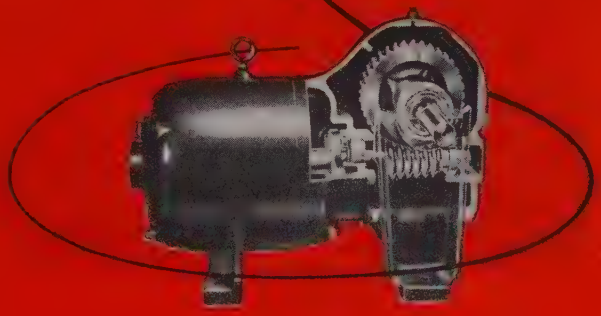

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dress: 2525 N. High St., Columbus 2, O. General secretary: Charles S. Pearce.

September 20-23, National Metal Trades Association: Eastern plant management conference, Sagamore hotel, Lake George, N. Y. Association address: 122 S. Michigan Ave., Chicago 3. Commissioner: Charles L. Blatchford.

September 20-23, Packaging Machinery Manufacturers Institute: Annual meeting, Skytop Lodge, Skytop, Pa. Institute address: 342 Madison Ave., New York 17. Secretary-treasurer: Helen L. Stratton.

September 20-23, American Institute of Wholesale Plumbing & Heating Supply Associations Inc.: Annual convention, Hotel Waldorf-Astoria, New York. Institute address: 402 Albee Bldg., Washington. Executive secretary: George T. Underwood.

September 21, Cutting Tool Manufacturers Association: Fall meeting, Lochmoor Club, Detroit. Association address: 416 Penobscot Bldg., Detroit 26. Secretary: M. J. Ewald.

September 21-22, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland. Secretary: F. Kermit Donaldson.

September 21-23, Truck Body & Equipment Association Inc.: Annual meeting, Sheraton-Gibson hotel, Cincinnati. Association address: 1122 DuPont Circle Bldg., Washington 6. Executive manager: Arthur J. Nuesse.

September 21-24, American Mining Congress: Annual metal and nonmetallic mineral mining convention, Olympic hotel, Seattle, Congress address: 1102 Ring Bldg., Washington 6. Executive vice president: Julian D. Conover.

September 21-25, Instrument Society of America: National instrument conference and exhibit. Hotels Morrison and Sherman, Chicago. Society address: 1319 Allegheny Ave., Pittsburgh. Manager: P. V. Jones Jr.

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September 23-25, National Industrial Conference Board Inc.: General session for all associates on marketing, Hotel Waldorf-Astoria, New York. Board address 247 Park Ave., New York 17. Secretary Herbert S. Briggs.

September 23-26, National Association of Foremen: Annual convention, Milwaukee. Association address: 321 W. 1st St., Dayton 2, O.

September 24-27, American Refractories Institute: Fall Meeting, Broadmoor hotel, Colorado Springs, Colo. Institute address: 1872 Railway Exchange Bldg., St. Louis 1. President: W. J. Westphalen.

September 28-30, American Management Association: Personnel conference, Hotel Statler, New York. Association address: 330 W. 42nd St., New York 36. President: Lawrence A. Appley.

September 28-30, National Electronics Conference Inc.: Annual conference, Hotel Sherman, Chicago. Conference address: 852 E. 83rd St., Chicago. Executive secretary: Karl Kramer.

September 28-October 1, Association of Iron & Steel Engineers: Annual meeting, Hotel William Penn, Pittsburgh. Association address: 1010 Empire Bldg., Pittsburgh. Managing director: T. J. Ess.

September 29-October 3, Society of Automotive Engineers: National aeronautics meeting, aircraft engineering display and aircraft production forum, Hotel Statler, Los Angeles. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

September 30-October 2, Porcelain Enamel Institute: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: 1346 Connecticut Ave., NW, Washington 6. Secretary: John C. Oliver.

October 1, American Iron & Steel Institute: Youngstown regional technical meeting, Hotel Pick-Ohio, Youngstown. Institute address: 350 Fifth Ave., New York 1. Secretary: George S. Rose.

October 5-7, American Society of Mechanical Engineers: Fall meeting, Hotel Sheraton, Rochester, N. Y. Society address 29 W. 39th St., New York 18. Secretary: C. E. Davies.

October 19-23, National Metal Congress & Exposition: Public auditorium, Cleveland. Information: W. H. Eisenmann, secretary, American Society for Metals, 7301 Euclid Ave., Cleveland 3.

AISI Plans Fall Program

American Iron & Steel Institute has released its schedule of five technical meetings for the 1953 fall season. In addition, the institute plans a 3-day session for company chairmen and presidents.

The latter will be held Sept. 22-24 at Seaview Country Club, Absecon, N. J. Technical sessions are Oct. 1, Hotel Pick-Ohio, Youngstown; Oct. 8, Palmer House, Chicago; Oct. 21, Hotel Thomas Jefferson, Birmingham; Nov. 6, Hotel Mark Hopkins, San Francisco; and Dec. 3, Warwick, Philadelphia.

Conference on Enamel

A conference on porcelain enamel in the building industry is scheduled to be held in Washington Nov. 12 and 13 by that quasi-government group, the the BRAB Institute, formerly titled the Building Research Advisory Board of the National Research Council and National Academy of Sciences.

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You get lower coolant costs, too! Antisep All-Purpose Base is a heavily fortified and concentrated cutting base which is soluble in water. For heavy duty operation, 25 parts of water to 1 part Antisep Base is all that is needed—cost in the machine is less than 8c a gallon.

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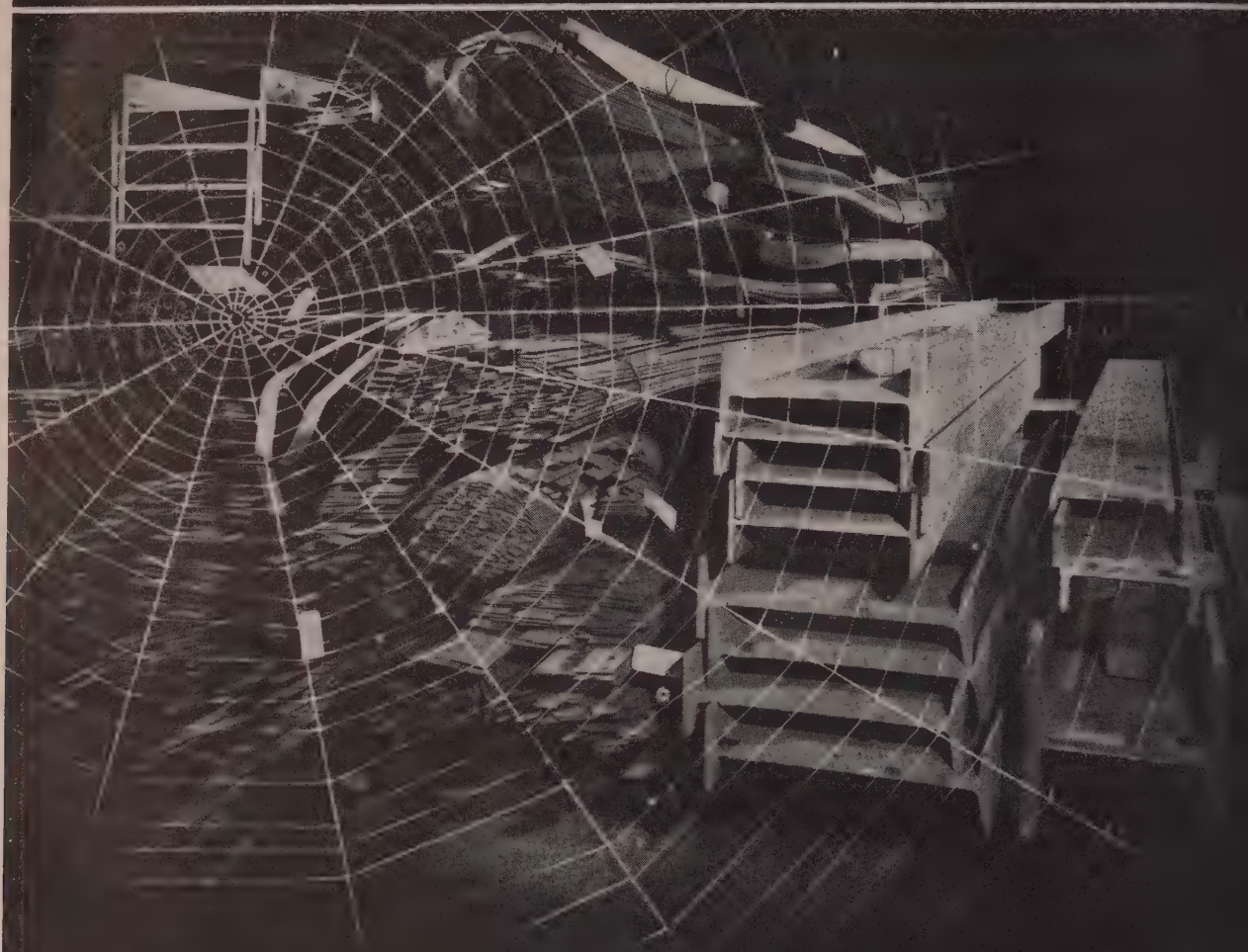

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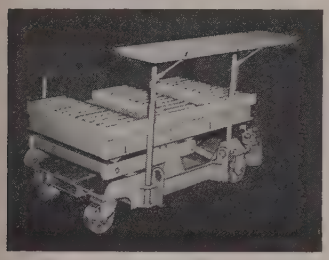
NEW PRODUCTS and equipment

Reply card on page 143 will bring you more information on any new products and equipment in this issue

Sheet-Feeding Table

. . . continuous press feeding

Roller top and special feed shelf adapted to the manufacturer's standard feeding tables maintain a steady flow of steel stock for punch press operation. Table is elevated by hydraulic foot pump so the top sheet of the inside stripped bundle



is slightly above the fixed height shelf. Single sheets are transferred from the pipe onto the shelf and fed lengthwise into the punch press.

When the inside bundle is used up, the table is lowered and a reserve bundle on the outside is moved to start another feeding cycle. Second strip bundle is always placed on the outside of the table top as reserve stock. Elevating table has 5-ton capacity. Raymond Corp., Dept. ST, 91105 Madison St., Greene, N. Y.

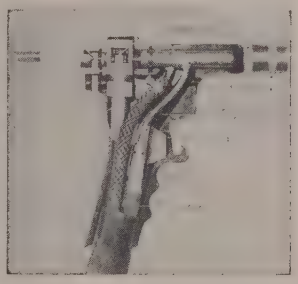
FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Consumable Electrode Welder

. . . feeds 0.030 to 0.193 inch

Consumable-electrode gas-shielded welding equipment includes three principal components designed specifically for use where filler metal must be added. Filler-arc generator is rated at 450 amp continuously, has rising volt-ampere characteristic. As current is produced by the welder, voltage generated increases, making the process completely self-regulating.

Welding gun contains knurled feed rolls for pulling the electrode wire from a spool mounted in the



wire drive unit. Trigger controls wire feed and gas flow. The gun is capable of feeding wire from 0.030 to 0.093-inch in diameter. Wire drive unit is mounted on a portable carriage and contains a motor control that powers the knurled feed rolls through a flexible shaft. General Electric Co., Dept. ST, Schenectady 5, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Flexible Vise

. . . brings work to operator

Vise jaws can be turned in any position desired to provide maximum flexibility to all work with this model. The unit is designed to bring the work to the operator

instead of causing the operator to twist himself around to reach the work. It is particularly adaptable for special or unwieldy holding conditions.

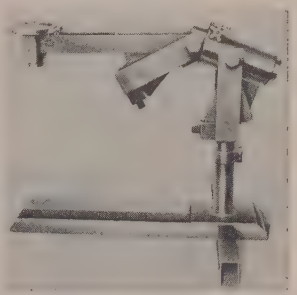
Construction permits complete 360-degree rotation in any direction. The vise can be raised or lowered as desired to permit work positioning where it will be the most convenient. FlexiVise Co., Dept. ST, 1149 E. Pico Blvd., Los Angeles, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Heavy-Duty Welding Positioner

. . . capacity to 2000 pounds

Welding positioner line is expanded by addition of a 2000-pound capacity model. The 1-ton rated machine provides finger tip positioning of any size workpiece from



10 to 2000 pounds. It is particularly applicable in welding where downhand positions result in faster weld deposit and higher weld quality. Aronson Machine Co., Dept. ST, Arcade, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

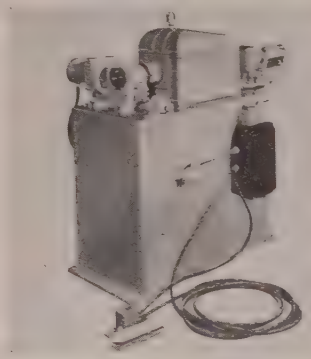
End-Finishing Machine

. . . work up to 3 inches OD

Series 700 air-operated end-finishing machine is designed for work up to 3 inches OD. Model has 2-inch stroke and maximum 2000 rpm spindle speed.

Chuck and spindle air cylinders

are controlled through an electric foot switch. Movement of the foot switch closes the chuck, the work locating stop is pivoted clear by a small air cylinder mounted on the



side of the clamping unit and the spindle is advanced through the machining cycle.

Unit has a wide range of applications for such work as light turning with hollow mill tools, chamfering and pointing bar stock, shaping tube or rod ends, or center-drilling. Pines Engineering Co. Inc., Dept. ST, 601 Walnut St., Aurora, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Sheet Metal Storage Handler

. . . reduces surface damage

Reduced material damage and handling expense on all types of sheet material is reported with this vertical-storing sheet handler. De-

pending upon the storage problem, the handler can be used as portable equipment and stored when not in use, or installed permanently where space permits and large amounts of sheet material must be kept on hand.

Manufacturer reports the hand-ler permits up to 200 per cent more space utility than skids handling the same amount of sheet material. Each unit has 2500 pounds capacity, weighs 11 pounds. Western Mfg. Co., Dept. ST, Arkansas City, Kan.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Pallet Rollers

. . . movement to any location

Effortless movement of palletized loads in any direction and to any location is provided by these Swivel King pallet rollers. Rollers are 3½ inches in diameter, crowned for floor protection. Frame is high tensile strength steel, fully welded.

Frame sizes range from 30 x 30 to 48 x 48 inches. Frank L. Robinson Co., Dept. ST, Latham Sq. Bldg., Oakland 12, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Pen-Size Oiler

. . . for hard-to-reach spots

Leak-proof Oilette, a fountain-pen sized product, is an answer to problem oiling spots which the conventional oil can reaches with

difficulty. The model can be used to get into most hard-to-get-at places in such items as precision machinery and instruments. It should be particularly applicable for business premium and gift purposes. Autopoint Co., Dept. ST, 1801 Foster Ave., Chicago 40, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Breathing Apparatus

. . . total weight: 8½ pounds

Thirty-minute breathing apparatus, called Pocketaire, weighs 8½ pounds and features a 5-minute escape cylinder that can be opened when the large cylinder is exhausted. This makes it unnecessary for the user to watch the

pressure gage to check supply. Apparatus can be recharged with any standard oxygen cylinder and delivers sufficient volume to be used as an emergency inhalator.

The same model, with two 5-minute cylinders, weighs only 4 pounds complete with mask and shoulder holster. Cycle-Flo Co., Dept. ST, Milford, Conn.

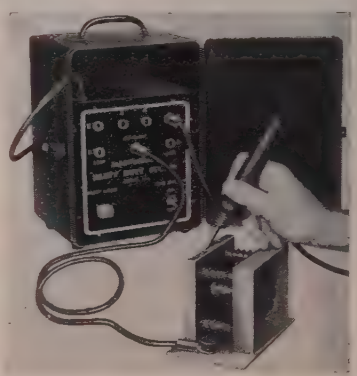
FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Heavy-Duty Etcher

. . . heat range: 180 to 1375 w

Model A-A electric etcher has applications as a production line tool and in tool rooms where heavy parts are marked. Its wide range makes it applicable for use on small parts or for marking large parts such as castings.

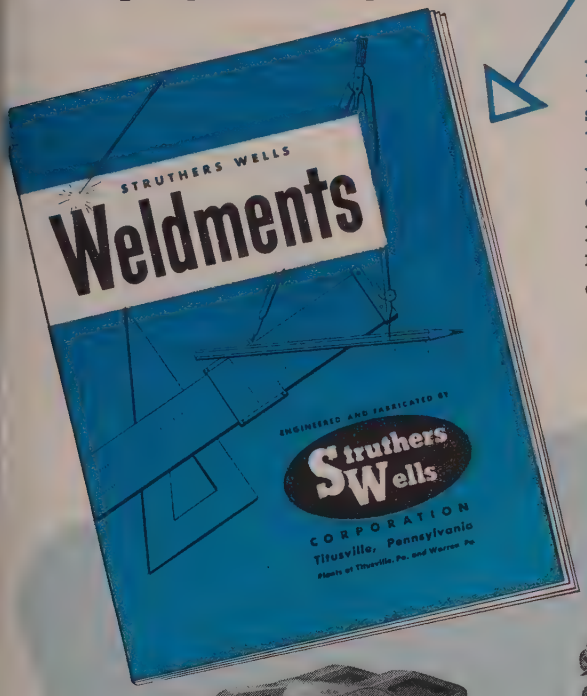
Six heats produce 180 to 1375 w. Since all heats are taken from



taps on the secondary, and the full primary winding is always in the circuit, the etcher can be left connected to the line without danger of overheating when not in

the facts IN THIS NEW BROCHURE

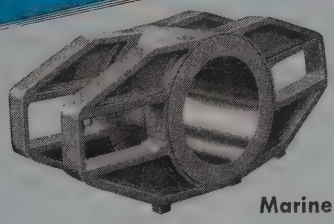
May guide you to... SUPERIOR PRODUCT DESIGN WITH REDUCED COSTS!



A potential guide to real profits for you, this new 16-page brochure stresses the advantages of using steel weldments, and outlines why STRUTHERS WELLS—through equipment and experience—is your logical source of supply. A technical section compares the properties of steel and cast iron, presents general data on weldability of ferrous metals, and includes many definitions of interest concerning weldments. May we send you a copy?

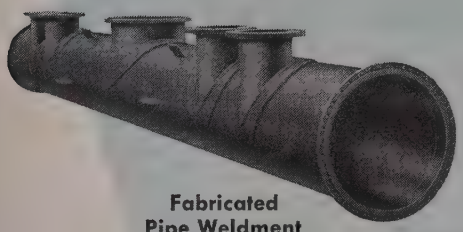
Representative Weldments by Struthers Wells

Vessel Weldment

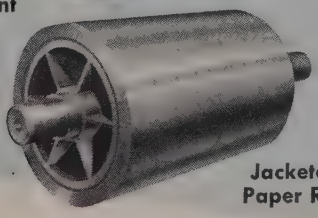


Marine Tiller

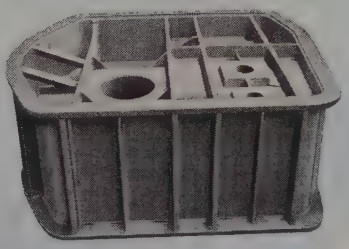
Large Turbine Base



Fabricated Pipe Weldment



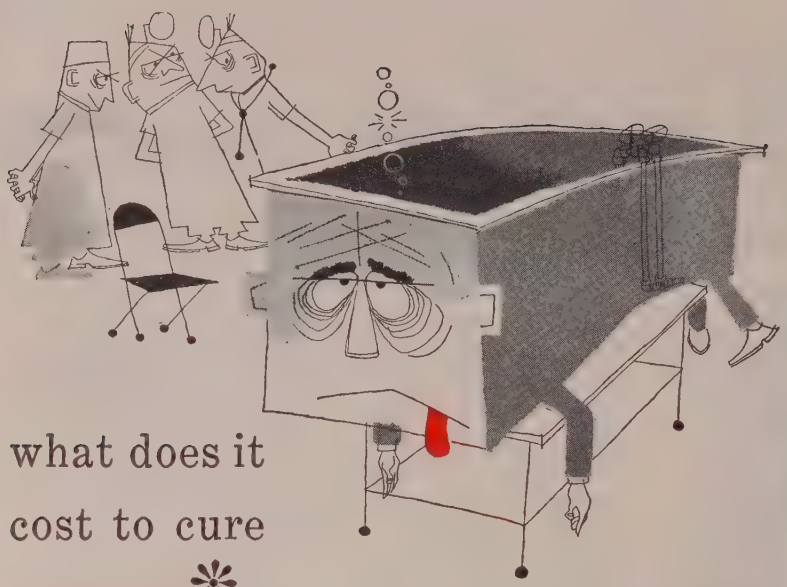
Jacketed Paper Roll



Gear Drive Housing

Struthers Wells **STRUTHERS WELLS CORPORATION** • *Titusville, Pa.*

PLANTS AT TITUSVILLE AND WARREN, PA.



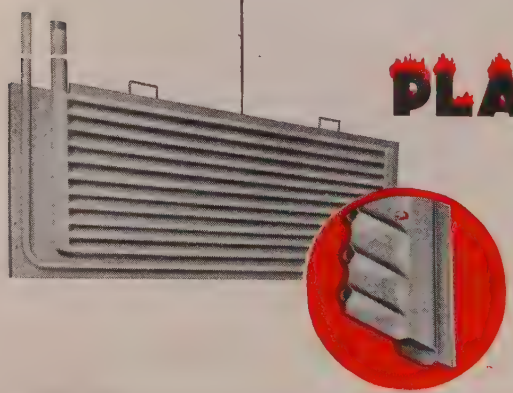
what does it cost to cure **coil-itis** in your processing tank?

The constant care it takes to keep tanks operating when they're plagued with coil-itis is extremely costly. Downtime, and all the other maintenance time, slow heating and cooling ills of using old-fashioned pipe coils can be cured with Platecoils. As revolutionary as the new wonder drugs, Platecoils save as much as 50% in initial cost. They take 50% less space in the tank. They simplify maintenance and save hours of downtime. Compared to the hours it takes to clean and replace pipe coils, Platecoils can be cleaned and replaced in no time at all . . . without dumping the solution. It costs less to cure coil-itis with Platecoils than to suffer its evils. **Write for bulletin P72 today!**

PLATECOILS SAVE 50% IN HEAT TRANSFER COSTS

PLATECOILS COST LESS TO BUY, INSTALL, MAINTAIN

The Newcomb-Detroit Co., Grand Rapids Division, has found it is less costly to buy, install and maintain Platecoils than to fabricate pipe coils in their own plant. Ask about other case histories.



PLATECOIL

REPLACES PIPE COILS

Coil-itis — Diagnosed as tank heating and cooling problems. Platecoils — the prescription for solving pipe coil problems.

PLATECOIL DIVISION, TRANTER MANUFACTURING, inc., LANSING 4, MICHIGAN

use. Electrode and ground lead plug into, rather than attach to terminals. Martindale Electric Co., Dept. ST, 1375 Hird Ave., Cleveland 7, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Ice Removing Chemical

. . . no more chipping, shoveling

X-73 ice remover melts ice and snow considerably faster than salt, eliminates ice chipping and greatly

reduces need for shoveling. Manufacturer reports it also contains a rust inhibitor that affords protection to equipment, drains and gutters.

Produced in the form of coarse granules, the chemical is applied simply by sprinkling lightly over surface. Monroe Co. Inc., Dept. ST, 10703 Quebec Ave., Cleveland 6, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Plastic Coating Tanks

. . . no other tank required

Plast-O-Dip and Wax-Master application tanks are being made in an expanded production line that includes a range from 1 to 100-gallon capacities. The larger tanks are used with automatic conveyor systems. Both models are designed to handle an entire operation of heating, melting and dipping in application of plastic skin coatings, wax and other hard-to-melt compounds.

With this equipment, no mother

USE A **REPLY CARD**

Just circle the corresponding number of any item in this section for more information.

Yours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

. Matchplate Frame

Cooper Alloy Foundry Co.—Tech-al article "New Type Matchplate ame" describes and illustrates a oduct said to be simple to operate, xible as to types and sizes which n be accommodated and possessing g life service. Changes of inserts n be made in 20 seconds.

. Machine Tools & Accessories

Morey Machinery Co.—180 pages illustrations, data and specifica-ns on domestic and European ma-ine tools are found in catalog 270. so included are about 35 pages of formation on a wide variety of ac-ssories for turret lathes and other achines. Company services are de-ribed.

0. Wrought Iron Pipe

A. M. Byers Co.—Five tests for sitive identification of wrought on pipe are described in a 4-page ustrated brochure. It also tells why cognition of piping material is im-rtant.

1. Contract Stamping Service

Laminated Shim Co., Stampings iv.—12-page well illustrated bulle-n outlines company facilities for ntract production, short run and achine cut stampings. Equipment shown in operation. Press capacity es as high as 100 tons, 24-in. uare, with shallow draw to ¾-in. pth.

2. Circuit Testers

General Electric Co.—Illustrating nd describing company line of hook-n type volt-ammeters, wattmeters nd power factor meters, bulletin EC-901 details applications, opera-on and basic features of the instru-ents. Here's a great deal of con-se data in only 8 pages.

3. Precision Bearings

McGill Mfg. Co.—General informa-on, dimensions, load capacities and pplication data are offered in 136-age catalog No. 52 on Multirol and uiderol full type roller bearings as well as McGill ball bearings. Tabbed sections of this piece include one on engineering as well as miscellaneous data. Bearing load computations plus factors influencing bearing selection are covered in the former.

74. Seamless Tubing

Pacific Tube Co.—6-page illustrated bulletin No. 10 contains general information, specifications, size ranges available and physical properties of cold drawn seamless steel tubing. Mill practice data and other useful information are included.

75. Meehanite Machine Parts

Meehanite Metal Corp.—"Meehanite Castings Build Better Machine Tools" is title of illustrated bulletin No. 38 of 24 pages. Material properties and applications to machines of various manufacturers are detailed. Properties are charted. Meehanite parts shown are of many types and sizes in variety of machines.

76. Corrosion Proof Equipment

Heil Process Equipment Corp.—Describing a wide range of acidproof lining materials, bulletin 460 also illustrates plastic fabrications, application of standard and Neoprene type rubber, lead, ceramic brick and alloys. It gives a chart of standard heating and cooling units fabricated from impervious graphite. Plant facilities are also shown.

77. Balancing Instrument

International Research & Development Corp.—Model 652 Vibratron, an instrument for vibration analysis and dynamic balancing, is described and illustrated in 4-page bulletin. Components are discussed, along with instrument's various applications.

78. Circular Cutters

Ohio Knife Co.—Various types of cutting edges on circular steel cutters are described and illustrated in 6-page bulletin. Besides steel, they can cut rubber, plastics, cloth and paper. Three grades are available.

STEEL 8-17-53

Penton Building, Cleveland 13, Ohio

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79. Stainless Tubing & Pipe

Damascus Tube Co.—8-page illustrated folder shows the manufacturing processes used in fabricating tubing and pipe, and takes the reader through the procedure from forming and welding to final inspection. Ample plant illustrations are shown, together with a chart listing available sizes.

80. Hydraulic Presses

Clearing Machine Corp.—In 28 illustrated pages, bulletin 216 takes the reader through the company line of hydraulic presses. Features, including an analysis of the hydraulic system, are fully described. Various styles of unit in capacities ranging between 200 and 2000 tons are also treated.

81. Tying Machine

United States Steel Corp., Gerrard Steel Strapping Div.—Models 0400 and 0401 fully automatic twine sealing machines are described and illustrated in 4-page bulletin. They will both tie packages of unlimited length, and have capacities of 10-in. width x 7-in. height and 14-in. width and 9-in. height, respectively. Features and versatility are given in quick-capsule form.

82. Press Brake Dies

Service Machine Co.—Worked from oversize chisel steel billets and then machined to size, forged steel brake dies are described in illustrated catalog. Range of dies which can be made is illustrated. Units are delivered unhardened and worked to a glass finish. They can be altered or reworked without annealing.

83. Self-Priming Pumps

Rice Pump & Machine Co.—Details and specs of all models of self-priming centrifugal pumps are found in 4-page illustrated bulletin No. 52. Sizes range from 2 in., 7000 gph to 4 in., 40,000 gph. All are gasoline engine driven, but some can be equipped for electric motor drive.

84. Corrosion-Resistant Paint

U. S. Stoneware Co.—Tygon paint and Tygorust "no-prep" vinyl primer are subjects dealt with descriptively in 16-page bulletin 730. Where and where not, as well as, how and how not to use these products is told. Chemical-resistance charts, plus chart on recommended primers and surface treatments are of interest.

85. Heat & Humidity Chambers

Tenney Engineering, Inc.—Line of temperature-humidity test chambers covered in 4-page bulletin 8612 can simulate temperatures from —100° to 200° F and relative humidities from 20 to 95 per cent. Specs give data on heaters, humidification, dehumidification, controllers, compressor equipment, construction, standard and optional equipment.

86. Sheet Metal Machines

Niagara Machine & Tool Works—32 illustrated pages of booklet 200-H have condensed specs and design and construction features for line of machines and tools for sheet metal work. Folders, rotary machines, formers, groovers, shears of various types, snips, lever punches, bench plates, and hand tools are among products covered.

EDITORIAL ARTICLES

Available in Limited Quantities

87. Mill Follows Market

In the middle 1930's Sheffield Steel Corp. of Kansas City noticed that an increasing percentage of their output was going into the Houston area and Texas market in general. They followed it down, built a plant and have been expanding it ever since. Read the story in STEEL article "The Mill Moved to its Market."

88. Long Annealing Line

Being installed at Lukens Steel Co., Coatesville, Pa., is a continuous annealing line that has overall length of 365 ft. Roller hearth furnace, operating between 950° and 1950° F, will handle 130 x 480-in. plate. This installation is described in STEEL article "No Waiting in The Long Line."

89. With Less Nickel

"Doing More with Less Nickel" STEEL article by E. A. Schoefer of Alloy Casting Institute which describes this company's research work on low-nickel alloys to prepare for future shortages. Type HF which contains 21 per cent chromium and 9 per cent nickel is showing promise as heat-resistant casting in 1600° F range.

90. Aluminum Coated Steel

Several methods are used to coat steel with aluminum for corrosion and heat-resistance. Choice depends on purpose of coating and type of part. Part 1 of STEEL article "Use the Right Process for Coating Steel with Aluminum," analyzes the Calorizing, aluminum chloride plating, spraying and electroplating methods

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...k is necessary. Most models fe...ure double boiler construction t... insure uniform heat transmis-

...n. Products Company Inc., ...pt. ST, 69 Wesley St., S. Hacken...k, N. J.

...MORE DATA—CIRCLE REPLY CARD NO. 12

...nmetallic Magnets

. . need no critical materials

...Ceramic permanent magnet ma...ial contains no nickel, cobalt, ...gsten, chromium or other criti...l materials. Magnadur magnets ...e made by a process of powder ...tallurgy from a mixture of bari...n and iron oxide. Mixture is ...essed or extruded in shape and ...ntered to produce a hard, rather ...ittle black pottery-like substance ...th permanent magnet qualities ...en magnetized.

...High resistance permits its use ... presence of high frequency fields ...ithout undesirable losses. Fer...xcube Corp. of America, Dept. ...f, 380 Marshall St., N. Adams, ...ass.

...R MORE DATA—CIRCLE REPLY CARD NO. 13

...lexible Sheet Metal Jaws

. . . extend stretch-form range

Function of flexible jaws de...gned especially for use on all ...pes of sheet stretch-forming ...quipment is to grip and curve the ...eet to the cross sectional con...ur of the die. While held in this ...rofile, stretch-forming then com-

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FORMING FACTS

72% SAVING IN METAL!
80% INCREASE IN PRODUCTION!
UNIQUE BALANCE CO. INC.

Typical results by every user of

NILSON 4-SLIDE

Wire and Ribbon Metal FORMING MACHINES

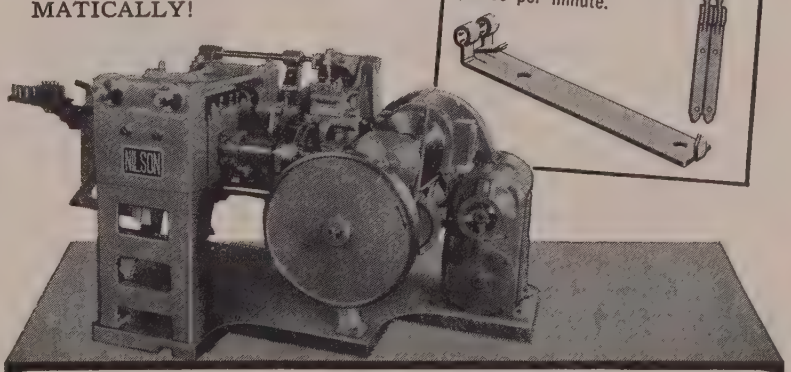
Plants from coast-to-coast are setting new production records with NILSON 4-SLIDE MACHINES . . . and experiencing tremendous economies and greatly improved quality.

Are you confronted with a keen competitive situation? Take the advice of hundreds of plant supervisors . . . install NILSON MACHINES and enjoy these economies *at once.*

NILSON combination press and 4-SLIDE forming machines take the stock directly from the coil — feed, straighten, pierce, blank, swage, stamp, coin — perform up to 5 forming operations and cut off . . . all in one quick, precise operation AUTOMATICALLY!

USING A NILSON COMBINATION PRESS AND 4-SLIDE FORMING MACHINE

Unique Balance Co., Inc. (one of the largest manufacturers of sash balance equipment), now produces 71,532 more parts out of the same amount of steel, compared to their former method. Production speeds increased from 100 to 180 pieces per minute.



THERE'S NOTHING LIKE A NILSON

For specific recommendations, send prints or samples of your operation when requesting bulletin.

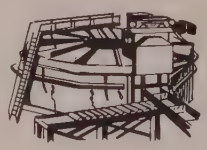
THE A. H. NILSON MACHINE CO.
1512 RAILROAD AVE. BRIDGEPORT, CONN.

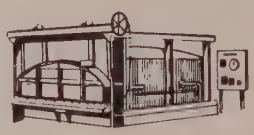
Automatic Chain-Making Machines • Automatic Staple Forming Machines • Wire and Stock Reels • Foot Presses • Wire Straightening Equipment • Slide Feeds for Presses

GASMACO INDUSTRIAL FURNACES

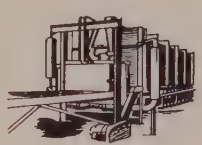
OIL OR GAS FIRED FOR ALL TYPES OF HEAT TREATING

GASMACO furnaces are designed for long, trouble-free service on a wide range of applications. Equipped to handle material of nearly any size or shape, they are ideally suited for forging, heat treating, spheroidizing and annealing.





Exclusive features of GASMACO furnaces are Silicon Carbide Tubes and Rollers which permit operating temperatures up to 2500° F., with fewer replacements. Complete control of the furnace atmosphere is maintained. Annealing is accomplished without decarburization or scale in simple, inexpensive car, pusher, conveyor, chain or roller hearth type furnaces.



All GASMACO furnaces are individually designed to fit your particular furnace requirements and to assure maximum operating economy. It will pay you to investigate these furnaces for your next heat treating job.

SALES REPRESENTATIVES

LEWIS C. BAXTER
2207 Ashland Avenue
Toledo 10, Ohio

McCONNELL SALES & ENGR. CORP.
2809 Central Avenue
Birmingham 9, Alabama

C. E. NOBLE
The Noble Equip. Co.
P.O. Box 39 • LaGrange, Ohio

KLIKA-STRIEBEL CO.
53 West Jackson, Rm. 1040
Chicago 4, Illinois

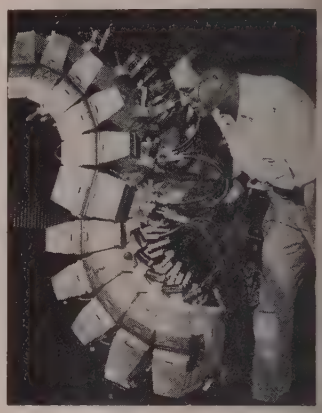
CHRISTY FIREBRICK CO.
506 Olive Street
St. Louis 1, Missouri

THE GAS MACHINERY COMPANY
16116 WATERLOO ROAD
CLEVELAND 10, OHIO

Designers • Fabricators • Erectors
Gas Plant Equipment and Industrial Furnaces

THE GAS MACHINERY CO. (Canada), Ltd.
HAMILTON, ONTARIO

pletes the longitudinal curves of the part. Manufacturer reports use of Hydra-Curve jaws saves as much as 30 per cent of material normally allowed beyond ends of



the die for transitional sheet stresses.

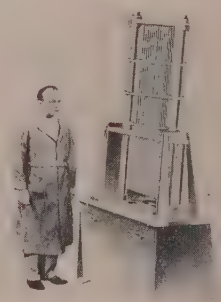
The company reports it simplifies formation of all parts with less wrinkling and permits formation of exceedingly deep curves by this stretch-forming process. Hufford Machine Works Inc., Dept. ST, 1700 E. Grand Ave., El Segundo, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Vertical Tube Expander

. . . adapted to copper tubing

This hydraulic-powered vertical tube expanding machine is a manually-controlled type particularly adapted to expanding and sizing



copper tubing. Model illustrated has expansion mandrels mounted on 1-inch centers. These mandrels expand sixty ⅜-inch diameter copper tubes 0.020-inch in an evaporator assembly to provide thermal conducting mechanical joints between the tubing and a stack of cooling fins.

Another set of 60 mandrels is picked up near the end of the

n polishing with Norton ALUNDUM abrasive. This man has the "Touch of Gold." His work ast, precise and low in cost. Uniform-sized grain means better quality finishes.

High capillarity Norton ALUNDUM abrasive soaks up water in test; does the same with glue on the job . . . assuring stronger, faster-cutting polishing wheel.

Polish with the

"TOUCH OF GOLD"

You get the right combination for fast and profitable work in Norton ALUNDUM* Abrasives

Every *grain* of Norton ALUNDUM polishing abrasive does its full quota of work! That's one reason your operators get the "Touch of Gold" that adds to the appearance and quality of your product . . . increases your profit margin, too.

You get better polishing at lower cost with ALUNDUM abrasive because each grain is identical with the next . . . hard, tough, long-lived and exact as to size and shape. No oversize grains to mar surfaces — no undersize grains to loaf on the job. Capillary tests show that Norton abrasive grain adheres tightly to the wheel until all its work is done. This assures better performance and longer life — greatest efficiency for you.

Fast service from your Norton distributor brings you the exact type of ALUNDUM polishing abrasive you need. He is backed by complete stocks at key industrial centers, ready for shipment in convenient container sizes . . . and by the specialized experience of Norton field engineers. Or you can write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

NORTON

ABRASIVES

Making better products to make other products better

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

G-256

POP'S school of Filing

NOW SEE IF YOU C'N LEARN TO HANDLE THAT JOB!
THAT'S CON FOOSHIUS, POP'S NEW HELPEROUTER!
POP'S TRIED 'IM ON NINE DIFFEREN' JOBS IN NINE DAYS!
HE'S SURE CONFOOZLED ON WOT'S TH' RIGHT FILE F'R TH' JOB!
STAN BOND

THE "language of files and filing" is a necessary part of every good mechanic's education—whether he is "majoring" in a specialized type of operation or is assigned to miscellaneous work around the shop. The days of haphazard file selection and filing techniques are gone in modern shop practices. Parts finishing, assembling and fitting must take into account diversity of metals, degree of accuracy—and the speed necessary to keep production costs within bounds.

Nicholson file engineers study all these factors and design files with tooth shapes, angles, sharpness and hardness to fit specific metals, methods and end results. With Nicholson, making files is a *science*.

If your Industrial Distributor handles Nicholson or Black Diamond brand files, he is well equipped to give your production heads helpful technical suggestions.

ABOVE—The Nicholson (or Black Diamond) Long Angle Lathe File. While the ordinary Mill file is normally capable of doing good lathe filing, the Long Angle Lathe file—with teeth angle increased to 45°—does faster and smoother work. The chips slide down the longer angle and there is less tendency of "pinning up" and scratching surface being smoothed.

NICHOLSON FILE CO. • 23 ACORN ST. • PROVIDENCE 1, RHODE ISLAND
(In Canada, Port Hope, Ont.)

NICHOLSON FILES *FOR EVERY PURPOSE*

...wn-feed to size the tube ends ... soldering return bend fittings ... expanding them an additional ...026 inch. Cycle time for the ...eration: 40 seconds. Walter P. ...ll Inc., Dept. ST, 22183 Tele...aph Rd., Detroit 19, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

...rk Lift Torque Converter

. . . drives like the family car

Automatic transmission makes it ...ssible to operate a gas-powered ...rk lift truck with the same three ...mple controls used to operate an ...tomobile: Accelerator, brake ...edal and forward-reverse selec...r. Design of the unit eliminates ...eed for a gearshift for high and ...w gears and a clutch and clutch ...edal.

One result should be a major ...avings because of reduced main...enance. Other important factors ...nclude smoother acceleration, ...nore positive driver control, ef...ortless changeover from forward ...o reverse motion and controlled ...nching ability. Clark Equipment ...o., Dept. ST, Battle Creek, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Micrometer Check Set

. . . includes three gage blocks

Micrometer checking set, designed for checking 1 and 2-inch micrometers, includes 3 gage blocks —0.2500, 0.6500 and 1.000-inch.

These are used individually or

...in combination for checking ac...curacy of micrometer screw at various points in its travel. Evidence of wear can be discovered readily. Two optical parallels of fused quartz, a part of the set,

Towmotor "hits the spot" with a pallet load of syrup at plant of East Chicago (Indiana) Pepsi-Cola Co.

TOWMOTORS IN ACTION IN U. S. INDUSTRY

PALATABLE LOAD

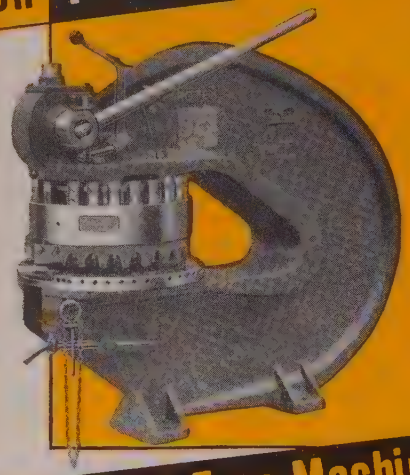
Palletable or palatable—it makes no difference whether you're handling hard goods or soft drinks, Towmotor loads, unloads, stacks, stores, delivers, and ships more kinds of materials in more ways, more quickly, more economically, more easily. Towmotor makes your operations look better literally and figuratively.

You'll want Towmotor, with new Power Steering that increases driver stamina by reducing steering effort 80% . . . with the new "Cushioned Power" Diesels that deliver more power and save fuel costs . . . and with the many other Towmotor features that make Towmotor the best buy for your boss and best by far for you! Send today for free booklet, "What Makes It Tick?" TOWMOTOR CORPORATION, Div. 1608, 1226 East 152nd Street, Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG ®

FORK LIFT TRUCKS and TRACTORS
SINCE 1919
TOWMOTOR ENGINEERED FOR QUALITY PERFORMANCE

Rotex Punch Presses



Have SPEED CASE Free Machining Plate Steel Die Turret Plate

SPEED CASE (X1515) low carbon, open hearth, steel plate has won the favor of numerous manufacturers of machine tools, because of its machinability, ease of finishing and response to various case hardening methods.

Typical is Rotex Punch Co., Oakland, Calif., who adopted SPEED CASE for the die turret plate on their versatile presses. They report ease of machining, longer tool life and negligible distortion in heat treating.

The die turret plate retains the dies which are readily removed and replaced. At a flick of the wrist a different size punch can be brought into position. The turret die plate is then rotated to the desired position and locked in place. Rotex "Quick Change" Punch Presses are widely used in sheet metal, fiberboard, plastic and other fabricating plants. Punches and dies may be round, square or other shapes. SPEED CASE has ideal physical properties for this application. Perhaps it can save time, cut costs on your equipment. Send for facts.

SPEED STEELS

SINCE 1856 W. J. HOLLIDAY & CO. (INC.)

SPEED ALLOY • SPEED CASE • SPEED TREAT

DISTRIBUTED BY

Brown-Wales Co., Cambridge-Hartford-Auburn, Bridgeport Steel Co., Milford, Conn. Beals, McCarthy & Rogers, Buffalo, N. Y. - Burger Iron Co., Akron, Ohio - Grammer, Dempsey & Hudson, Inc., Newark, N. J. - Earle M. Jorgensen Co., Los Angeles-Houston-Oakland-Dallas - Passaic County Steel Service, Inc., Paterson, N. J. - Peckover's Ltd., Montreal-Toronto - Peninsular Steel Co., Detroit, Mich. - Pidgeon-Thomas Iron Co., Memphis, Tenn. - Horace T. Potts Co., Philadelphia-Baltimore-York, Pa.

Produced by W. J. Holliday & Co., Inc., Speed Steel Plate Division, Hammond, Indiana. Plants: Hammond and Indianapolis, Indiana

provide an accurate and simple method for checking condition of the micrometer spindle and anvil faces. DoAll Co., Dept. ST, Des Plaines, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Quick-Reading Calipers

. . . measures 4-inch maximum

This caliper, designed for rapid measuring and easier reading, is spring-loaded for quick adjustment

to desired spread. Dial pointer is connected to the caliper leg to show instantaneously the exact outside measurement up to 4 inches. Graduated dial provides instant reading. Sheridan-Gray Inc., Dept. ST, 405 Via Chico, Palos Verdes Estates, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

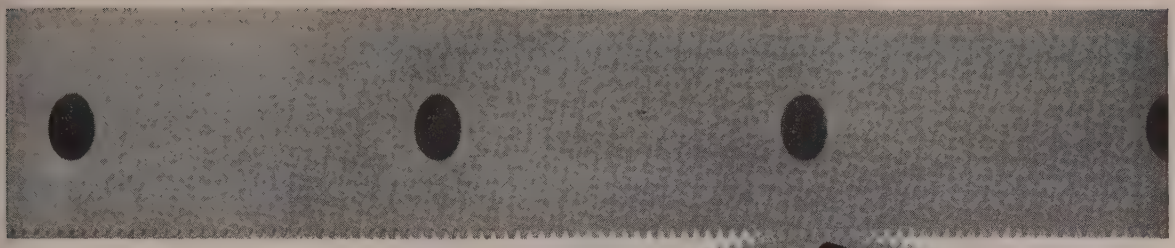
Improved Wheelbrush

. . . interchangeable sideplates

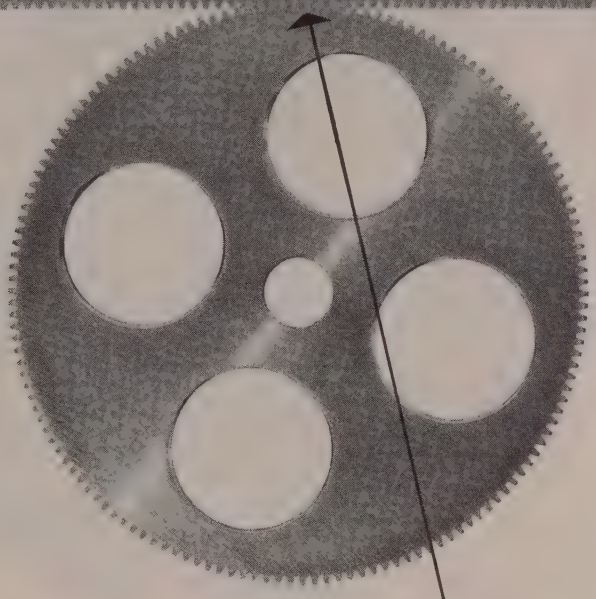
Redesigned wheelbrush can be used singly or in multiple units. As trim wears down, larger sideplates can easily be replaced by

smaller ones, exposing a new length of trim and increasing brush life.

Balance is achieved by clamping an almost identical number of filaments in each tuft, then anchor-



Why you can *reduce rejection losses* with a Kodak Conju-Gage Gear Checker



Why the composite check

In practice, the final test of gear quality is how the gear works in use. The composite check recommended in American Standard B6.11-1951 shows this conclusively by measuring displacement of the gear when run against a master of known accuracy. And it does it in one quick operation that checks combinations of as many as six types of errors.

Why the Conju-Gage Gear Checker

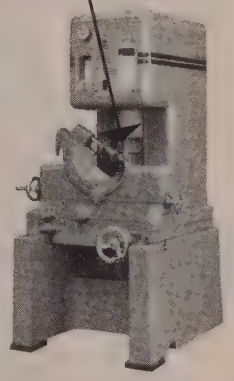
Since displacement represents the sum of both gear error and error in the master, the accuracy of the master used determines the precision of the composite check. The Kodak Conju-Gage Gear Checker uses a master of exceptional accuracy, the Conju-Gage Worm Section. Produced by thread grinding, its accuracy is not limited by the same manufacturing processes which limit accuracy in the gear itself.

To settle for masters of lesser accuracy is to rob yourself of "tenths"—to chance that tolerable error in a gear may coincide with error in the master to cause a needless rejection. Or that intolerable error in a gear may be cancelled by error in the master to pass a gear that will fail in use.

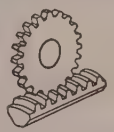
To reject every wrong gear is to guard the quality of your product. To pass every right gear is to reduce such rejection losses to a minimum.

To find out more about how a Kodak Conju-Gage Gear Checker can lower costs while maintaining required precision, send for your copy of the booklet, "Kodak Conju-Gage Gear Testing Principle." Write to

Special Products Sales Division
EASTMAN KODAK COMPANY, Rochester 4, N.Y.



The Kodak Conju-Gage Gear Checker automatically records the composite effects of runout, base pitch error, tooth thickness variations, profile error, lead error, and lateral runout. Illustrated is the Kodak Conju-Gage Gear Checker, Model 8U, for gears up to 8¼" pitch diameter. Smaller models are also available.

CONJU-GAGE  **INSTRUMENTATION**

. . . a new way to check gear precision in action

To inspect all kinds of complex parts on a bright screen, Kodak also makes two highly versatile contour projectors.

Kodak
TRADE-MARK

Want to clean pipe?

Cleaning 19¼-in. ID pipe. In this cleaner the sleeve has an adaptor with rollers easing the movement of the cleaner along the pipe.

Motor with sleeve to fit large pipe. Note universal coupling enabling cleaning of curved pipe.

LAGONDA tube cleaners

with their powerful air or steam driven 1100 Series motor and large selection of cutter heads, will clean any pipe, straight or curved, new or used, up to 20″ ID. Pipe fabricators find Lagonda cleaners invaluable for removing sand used in pipe bending as well as weld sputter and flux, mill scale, rust, or anything else that reduces pipe diameter or tends to retard liquid flow.

For full data see your local Elliott representative or write for the pipe cleaning bulletin to Elliott Company, Springfield, Ohio.

ELLIOTT Company

LAGONDA DIVISION

Y3-7

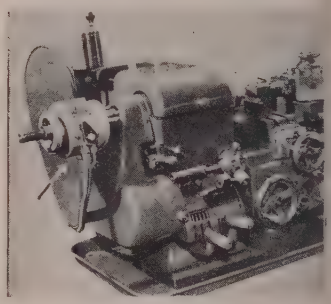
ing each tuft to the core with evenly-spaced heavy wire staples driven through a continuous steel channel. Industrial Division, Fuller Brush Co., Dept. ST, Hartford 2, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Air Collet Closer

. . . third hand for operators

This air collet closer becomes a third hand for lathe operators, reducing fatigue by eliminating the hand lever. It features nonstop lathe production on first or second operation work, with maximum bar-stock capacity at 1 inch. It



has automatic adjustment for variation in stock or parts. Accuracy is consistent because of controlled pressure on work.

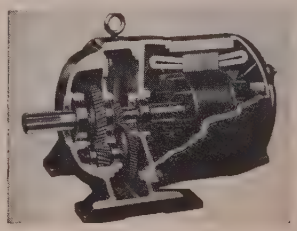
The closer uses any standard draw-type collet and step chucks. It is operated by wearless neoprene inner-tube. Durable Products, Dept. ST, 816 W. 50th St., Minneapolis, Minn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

Gearmotor Line

. . . frame sizes: 1 to 150 hp

Line of gearmotors features wide selection of compact, integral power units with single, double or



triple speed reduction. The units are available with any of the division's motor models, in several closure types. Frame sizes range from 1 to 150 hp.

Mountings can be horizontal

ewall, ceiling, inclined. Also ailable is a complete integral wer unit with the manufactur- s disk brake. Crocker-Wheeler vision, Elliott Co., Dept. ST, npere, N. J.

R MORE DATA—CIRCLE REPLY CARD NO. 21

eel Letter, Number Sets

. . . selection, storage simplified

Simplified selection and easy orage result from plastic box ckaging designed especially for ese steel number and letter sets. ontainers are fabricated from

reak-resistant plastic and have oles calculated to keep stamps in orrect position for instant use.

Seventeen sizes from 1/32 inch o 1 inch are produced with plain othic style characters. Parker tamp Works Inc., Dept. ST, 650 ranklin Ave., Hartford, Conn.

OR MORE DATA—CIRCLE REPLY CARD NO. 22

lectrolytic Stripper

. . . for zinc-base die castings

Available as a ready-to-use liquid supplied in standard 13-gallon carboys, Compound L-88 is a product for electrolytic stripping of defective copper, nickel and chromium plates from zinc base die castings. Defective zinc die castings are made the anode in the solution at 6 v.

Nickel and chromium coatings are stripped rapidly; copper coatings are stripped readily but at less speed. When defective plate is entirely removed and zinc surface exposed, a passive film is formed that inhibits further attack. Solution is operated from room temperature to 180°F. Enthone Inc., Dept. ST, 442 Elm St., New Haven, Conn.

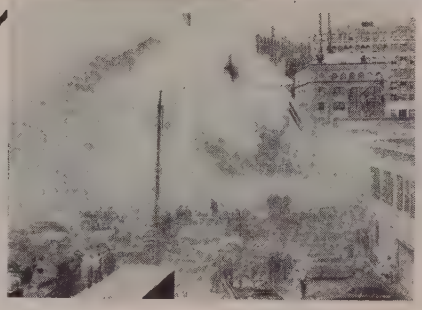
FOR MORE DATA—CIRCLE REPLY CARD NO. 23

"Automatic" Sprinkler

10 point FIRE PROTECTION

spells the difference between

PROFIT and LOSS!



This scene of a manufacturing plant going up in smoke and flames is repeated scores of times daily throughout the country. Newspapers referred to this one as a "half million dollar blaze." But, they were only talking about the building and its contents. They didn't refer to losses in terms of out-of-service time, lost customers, inflated costs of rebuilding, destroyed records, vanishing profits. No, those losses are intangible—yet, just as real, just as eminent as the physical cost of fire destruction.

"Automatic" Sprinkler 10 Point Fire Protection is an absolute safeguard against fire loss, tangible and intangible. It's a profit making service that saves you money whether you have a fire or not . . . saves your business if you do!

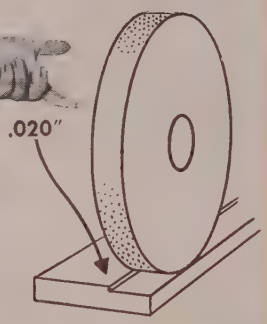
Get The Facts: Write for informative 36-page booklet, "The ABC of Fire Protection." It's free!

"Automatic" Sprinkler

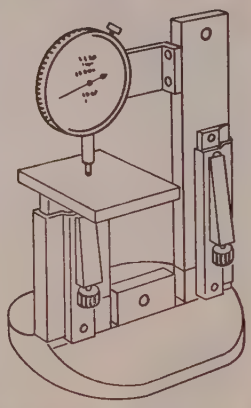
CORPORATION OF AMERICA · YOUNGSTOWN, OHIO

OFFICES IN PRINCIPAL CITIES OF NORTH AND SOUTH AMERICA

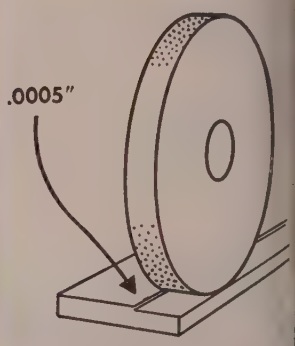
CAN YOUR SURFAC



1. Remove .020" from a 2" x 3" piece of oil hardened tool steel using a .020" automatic crossfeed at each end of the stroke —material to Rockwell 59-60 C scale.



2. Remove the work and measure its thickness. For extreme accuracy use DoALL Gage Blocks with Micro-Step accessories or electric comparator.



3. Put the work back on the machi zero the elevating hand wheel (sli on the DoALL hand wheels make quick, easy job.) Now set the hand to .0005" and cut across ⅓ of the

New DoALL Precision Surface Grinders Establish New Standard of Performance

THE test described above is just one of several that prove the accuracy, rigidity and matchless performance of DoALL Surface Grinders.

There is no give, no wheel ride-up, no play in a DoALL Grinder. Accurate duplication of parts, time savings and elimination of spoiled pieces are the advantage of true precision work. With a DoALL Surface Grinder your operator will not have to remove the work from the chuck and measure it for size. The DoALL Grinder will accurately produce parts to a predetermined tolerance from the hand wheel setting.

Surface grinding is often the *starting point* for accurate work and generally the *finishing point* when close tolerances are required. There is no substitute for perfection in surface grinding—can your grinder pass the DoALL test?

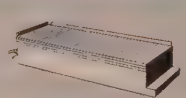
Proof of these claims can be yours without cost or obligation. Simply ask for a free demonstration. Operate a DoALL Surface Grinder in your plant, on your own work, and see how precision grinding will reduce operating costs.

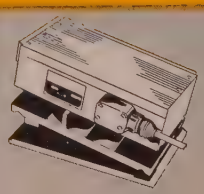
Call your local DoALL Sales-Service Store, or write:

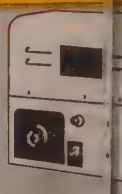
THE DoALL COMPANY

Des Plaines, Illinois

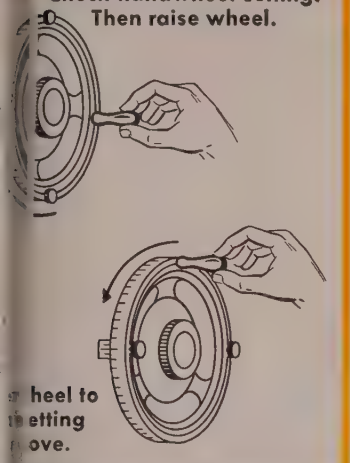
254 N. Laurel Avenue



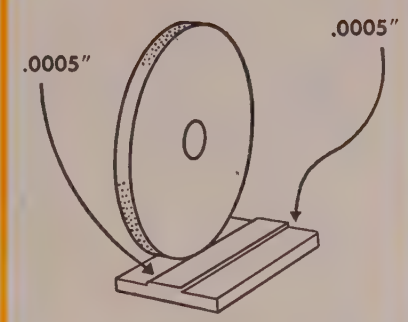




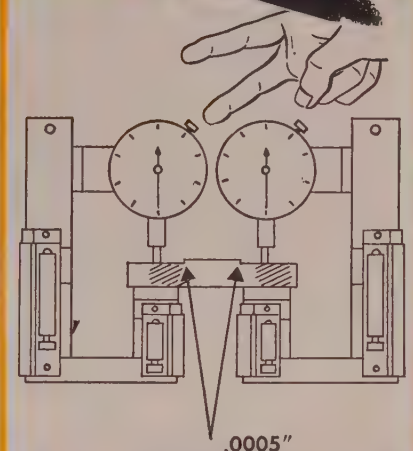
GRINDERS DO THIS?



the hand wheel setting, then grinding wheel. Now move the ce to the opposite side and lower ding wheel to the exact setting receding cut.



5. Now take another cut across ⅓ of the work on the surface opposite the first cut. The resulting cut should be precisely the same if your grinder is capable of accurate duplication.



6. Prove it! Measure three points in each cut with precision measuring instruments. If you make this test with a DoALL Grinder you'll find the work is perfect—the cuts *are exactly the same depth!*

New Models . . . New Sizes DoALL Surface Grinders for TOOLROOM and PRODUCTION Work

•

Patented Cool Grinding Time Saving Accessories

D-6 Models—6" x 18" and 6" x 24" sizes. Manual and hydraulic operation. 7" wheels.

D-8 Models—8" x 24" with 10" or 14" wheels. Manual and hydraulic operation.

D-10 Models—10" x 30" with 10" or 14" wheels. 12½" work height capacity, all models.

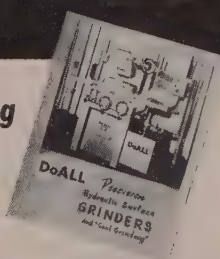
Table travel speed up to 100 fpm.

Available with new recirculating "Cool-Grinding" System.

Complete line of attachments and accessories for surface, cylindrical and form grinding.

Model D-10 Grinder with complete automatic, electric remote control system.

Write for NEW Catalog



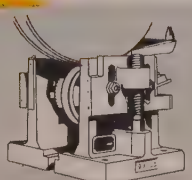
DoALL®

OOLANTS

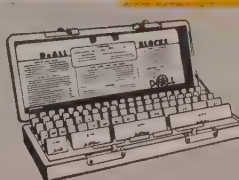
GRINDING WHEELS

DIAMOND DRESSER

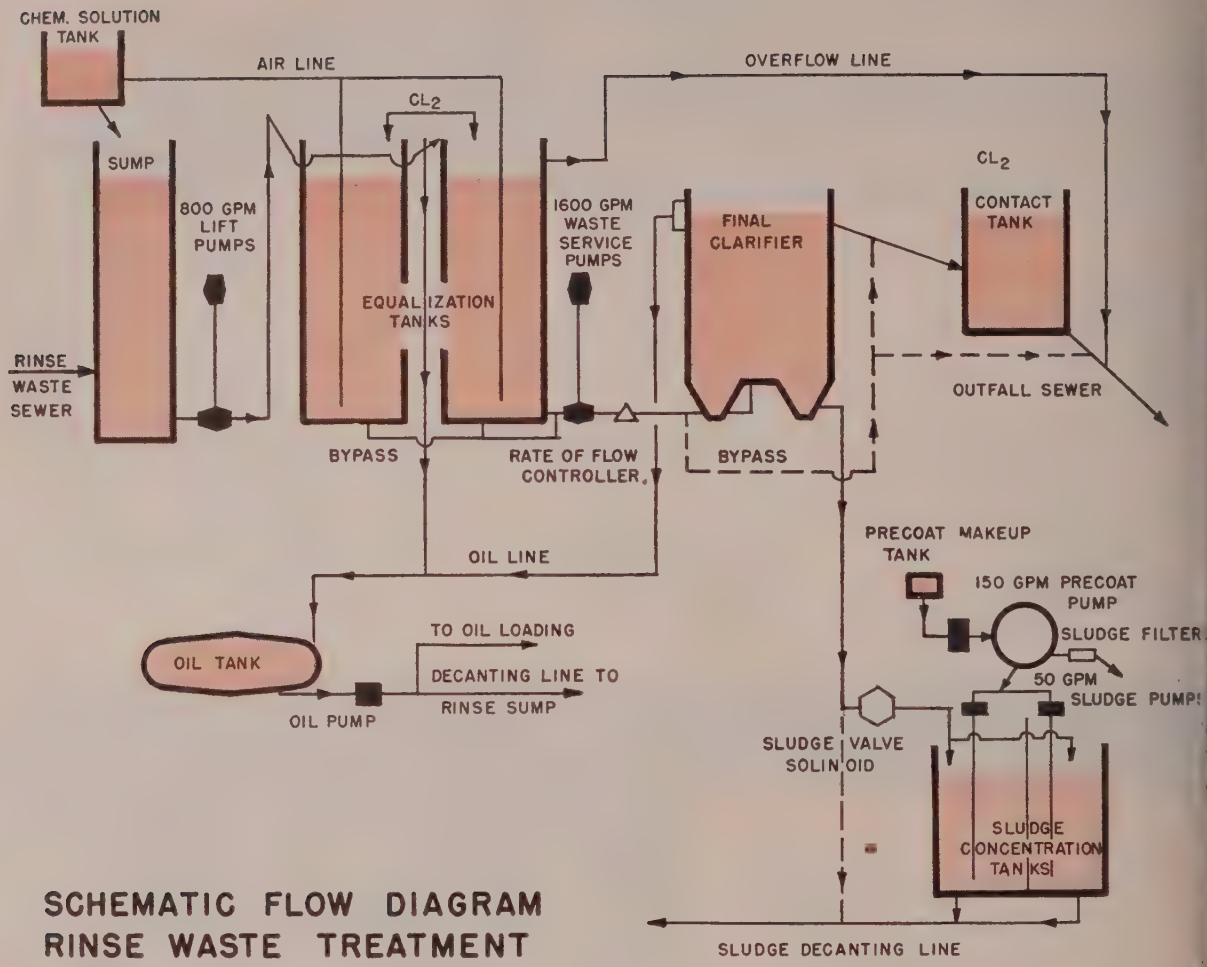
DUST COLLECTOR



CRUSH ROLLS



GAGE BLOCKS



SCHEMATIC FLOW DIAGRAM
RINSE WASTE TREATMENT

Triple-Play Waste Disposal

Three separate units process rinse and strong wastes at Allison. Plant has capacity of 1 million gallons during a one-shift day of 10 hours duration

By L. I. COUCH
President
L. I. Couch Co. Inc.
Indianapolis

INDUSTRIAL waste treatment unit that will handle up to 1 million gallons during the course of a 10-hour workday recently was completed at Allison Division, General Motors Corp., Indianapolis.

Separate facilities treat rinse, strong alkali and strong acid wastes. Use also is being made of three oil-water separation basins that were in operation previously. However, the new plant has facilities for free-oil removal when the need arises.

Chief sources of rinse wastes: Coolants used in metal cutting, overflow of plating rinse tanks and floor washings. Principal contaminants are free and soluble oils. Strong wastes include cyanide and chromic or other acids from spent plating or pickling baths.

Headquarters — Focal point of the installation is a two-story service building, which has a basement and sub-basement. Here space is provided for an office, laboratory, control room, work room, chemical storage room and all mechanical equipment, such as chemical feeders, chlorinators, pumps and sludge filters.

Rinse wastes are delivered to a receiving tank under the service building via an 18-inch gravity sewer. Here two pumps lift wastes into either of two equalization tanks. Each one-half million gallon tank is 56-feet square by 14 feet deep; and each is equipped with nine compressed air jets to turn and mix liquids.

Adapted from a paper presented by Mr. Couch before the recent Industrial Treatment Conference at Purdue University, Lafayette, Ind.

Clarifier—Next stop is the final clarifier, which is an Infilco Cyclator. Its construction includes a circular concrete basin with diameter of 70 feet, wall with water depth of 14 feet and hopper bottom. Interior mechanical equipment divides the basin into four zones: primary and secondary mixing, retention and settling. Equipment includes mixing recirculation, sludge collection and removal, and hydraulic skimmer.

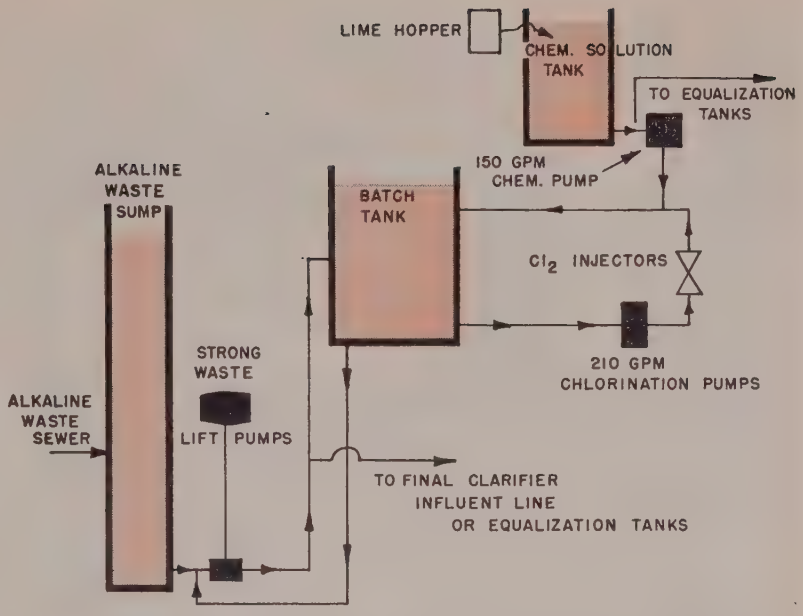
Wastes enter the clarifier through center bottom and exit through peripheral launders. Chemicals needed for treatment are fed into the primary mixing zone. Sludge scrapers deposit sludge in hoppers, which are unloaded automatically.

Treatment process involves coagulation with controlled slurry recirculation and precipitation. Three dry-type feeders installed in a separate room on the first floor of the service building supply chemicals. Hydrated lime is used for pH control and subsequent precipitation of metals. Ferrous sulphate, which reduces chromates, acts as a coagulant, and the resultant precipitate removes soluble oil by adsorption.

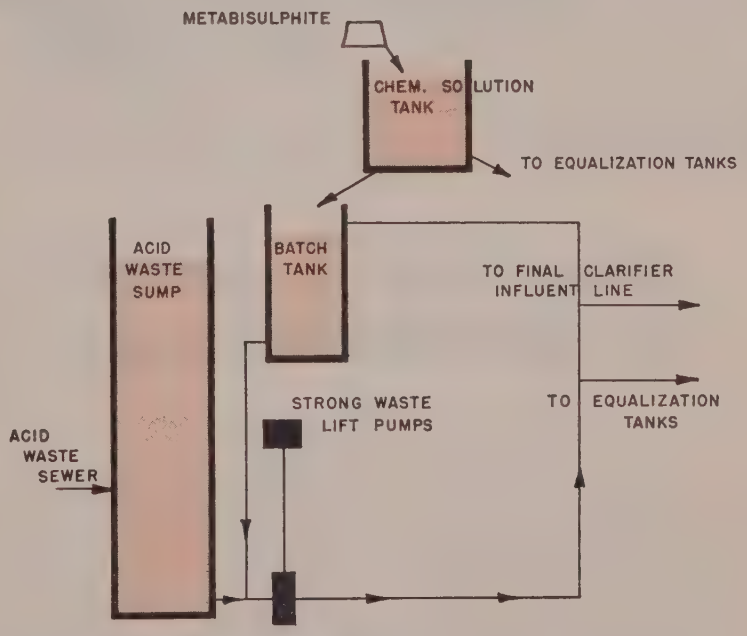
Contact Basin—Clarifier effluent flows to the contact basin where chlorine, piped from machines on the first floor of the service building, is applied to reduce cyanides to cyanates. Sludge withdrawn goes to either of two sludge concentration tanks, which are equipped with a decanting device to remove clarified liquor and return it by gravity to the rinse waste sump.

Sludge concentration tanks are in the sub-basement of the service building. Pumps lift the sludge to dewatering equipment on the second floor. Equipment there includes two 4 x 4-foot vacuum-filter drums. Filters are arranged to discharge sludge cake through a floor chute to a truck bed on the ground floor. This dried sludge will be used to land-fill Allison property.

Alkalis, Acids—Strong wastes are separated at their source and transported in portable tanks to receiving sumps. From there, they travel down gravity sewers to separate sumps under the service building, then are lifted into respective batch treatment tanks at basement level outside the service building.



SCHEMATIC FLOW DIAGRAM ALKALINE WASTE



SCHEMATIC FLOW DIAGRAM ACID WASTE

Two chemical solution tanks for batch treatment are adjacent to the batch tanks, but are at first-floor level. This elevation allows for delivery of solutions by gravity to the batch tanks and equalization tanks, if pretreatment of rinse wastes before delivery to the clarifier is necessary.

Location also enables direct delivery of chemicals to the tanks by chutes from the chemical storage room on the second floor. Here a 500-pound platform scale on wheels weighs the chemical used in

SHENANGO *Centrifugal* CASTINGS ... KEY TO SAVINGS

Centrifugally cast Meehanite Metal rams for meat rendering presses. The finer, more evenly dispersed graphite flakes in these Shenango cast Meehanite Metal parts avoid stress concentrations and permit finer finishing.

Bring down overhead the SHENANGO way!

Here are two reasons why Shenango parts will cut costs for you:

First, the high-strength, pressure-dense castings produced by Shenango's centrifugal process... castings free from sand inclusions, blowholes and other defects ... are keeping work stoppage, lost production and premature part failure to a minimum for Shenango users everywhere.

Secondly, modern facilities and skilled workmen at Shenango turn out precision-machined parts *exactly* to your specifications. A real saving in time and money over parts that *almost* fit perfectly.

Send for free bulletins. All sizes and types of symmetrical parts are produced by Shenango in rough, semi- or precision-machined finish. Bulletin No.150 covers nonferrous metals; Bulletin No. 151 covers Meehanite Metal, Ni-Resist and special iron alloys. *Write to...*

SHENANGO-PENN MOLD COMPANY
Centrifugal Castings Division
Dover, Ohio
Executive Offices: Pittsburgh, Pa.

SHENANGO

ALL RED BRONZES · MANGANESE BRONZES · ALUMINUM BRONZES
MONEL METAL · NI-RESIST · MEEHANITE® METAL

There's Joy in Euclid

Angry complaints from residents in the vicinity of storm sewer tunneling in Euclid, O., stopped the blasting operations. Work continues quietly now that a Joy continuous coal mining machine bites away at the tough blue shale at 20 feet per 8 hour day

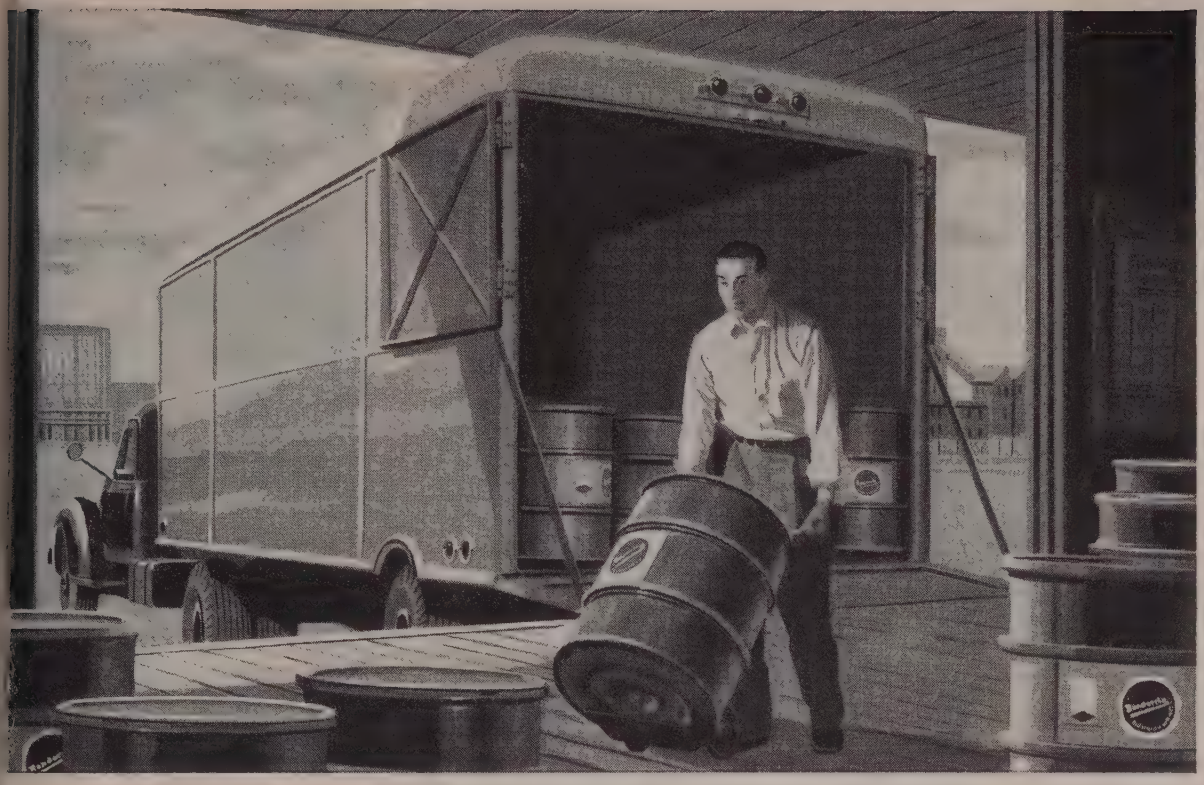
solution tanks. A portable dust collector is used at chute hoppers.

Cyanide—Cyanide wastes are reduced with chlorine by the application of about 4 pounds per million parts of cyanide. (For this and other chlorination service, two Wallace & Tiernan chlorinators, rated to deliver 6000 pounds of chlorine per day, are installed on the first floor.) Lime is added to maintain a pH of 9.5 to 10.0 to prevent liberation of noxious gases. The lime slurry is applied proportionately by a diaphragm pump.

Ferrous sulphate, sodium metabisulphite or sulphuric acid reduce strong chromate wastes. This is followed by application of lime to precipitate chromic hydroxide.

Treated strong wastes are delivered at controlled rates of flow to the final clarifier by means of strong waste sump pumps. These pumps are also piped to discharge to the equalization tanks, to permit using reduced chromium wastes in the pretreatment of rinse wastes.

Controls — Appropriate equipment controls the three waste treatment units. Pumps for rinse waste receiving tanks, for instance, are automatically controlled



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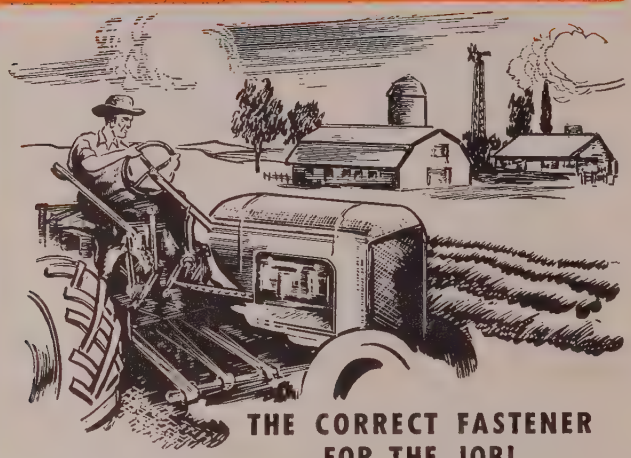

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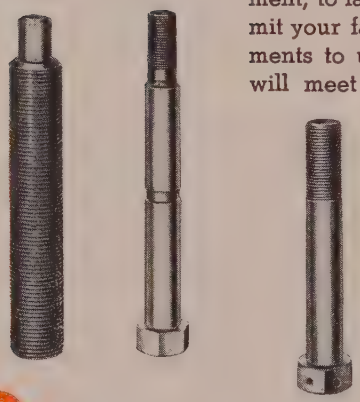

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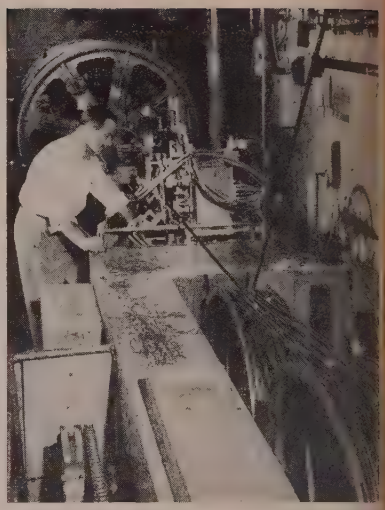

Wire Rope Marker

Simple expedient of putting a gold marking at 5-foot intervals provides for the first time an efficient way to measure-at-a-glance Paulsen-Webber wire rope. Marking machine is automatic and easily reset if desired

---

with a programmed float switch which is actuated by the liquid level in receiving sump. The electric control circuit is connected to actuate solenoid valves and timers provided for automatic sampling of wastes being delivered to the equalization tanks. The two pumps serve as standbys to each other with a manual transfer switch in the control circuit to enable pump selection.

Interconnected to the pump control circuit is a high-liquid-level alarm on a separate electrical circuit to the electrical control panel. Lights and a gong advise the operator on floors above of an lift-pump operating failure. The circuit also extends to lights and a gong remotely located in the industry's water plant operating room. Here round-the-clock operators are on duty.

Resistance Welding Bibliography

Complete and accurate record of published technical articles on all phases of resistance welding with in the past few years is compiled and available from Resistance Welder Manufacturers Association 1900 Arch St., Philadelphia 3. Price $1.25 per copy.

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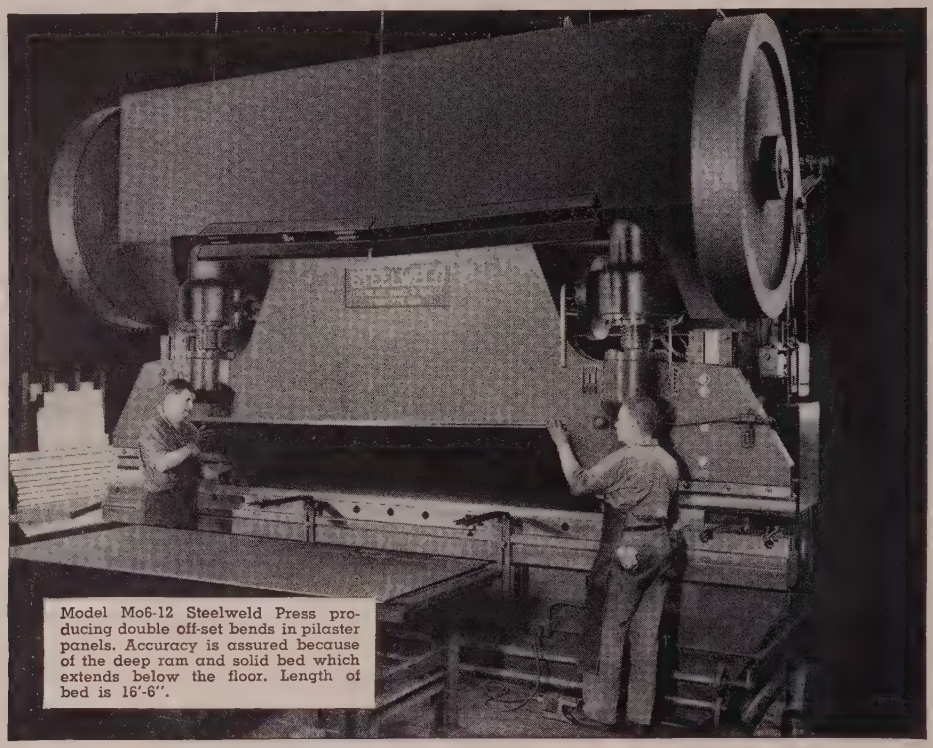
SPEED PRODUCTION



Model Mo6-12 Steelweld Press producing double off-set bends in pilaster panels. Accuracy is assured because of the deep ram and solid bed which extends below the floor. Length of bed is 16'-6".

It takes power to make long sharp bends. It takes size and design to assure accuracy. The Mills Company, Cleveland, Ohio, well-known manufacturers of fine metal partitions achieve both with their big 500 ton capacity Steelweld Press.

But more! They also obtain speed and safety. Their machine is provided with several features that are extremely advantageous:

1. Air-electric control for high production.
2. Electric foot switches for easy fatigueless operation.
3. Ram-positioning selector for stopping ram automatically at pre-selected points.
4. Two speeds, 7 or 21 strokes per minute for best operating speed.
5. Reversing flywheel for quick stopping or reversing of ram at any point.
6. Safety dual control permitting operation only when both operators are ready.

The Mills Company are proud of their modern Steelweld Press. It is the largest of several press brakes in their plant. It is in continuous operation, two shifts a day.

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BRAKING • FORMING • BLANKING • DRAWING • CORRUGATING • PUNCHING

afety Suit Proves Saver

Furnace downtime on cylinder treating line cut to almost zero in first three months

OURS of cylinder production time d spoiled heats at Walter Kidde Company Inc.'s Belleville, N. J. ant are saved, thanks to an alu- inum-coated suit.

Used in conjunction with a huge as furnace which continuously eat-treats and degreases fire ex- nguisher cylinders, the outfit per- its the man to work comfortably etween the two tunnels of the fur- ace and to make necessary ad-

SUIT IS COOL IN HOT SPOTS
. . . so are savings in downtime

justments to it at temperatures up o 400° F for as long as 45 min- ites.

Old Method — Formerly, when urnace controls needed adjust- ment, the furnace was secured and ook two days to cool sufficiently or men to enter the control area and work for a maximum of 30 sec- onds. Now, production continues uninterrupted during adjustments and the worker is not subjected to extreme heats or carbon monoxide gas.

Rig was developed jointly by the Kidde safety department and the Guardian Safety Equipment Co., E. Orange, N. J. It has six basic parts: Hood, mask, suit, gloves, shoes, and air purifier. Suit and hood are made of a pliable, herring- bone-type fabric coated with alu-

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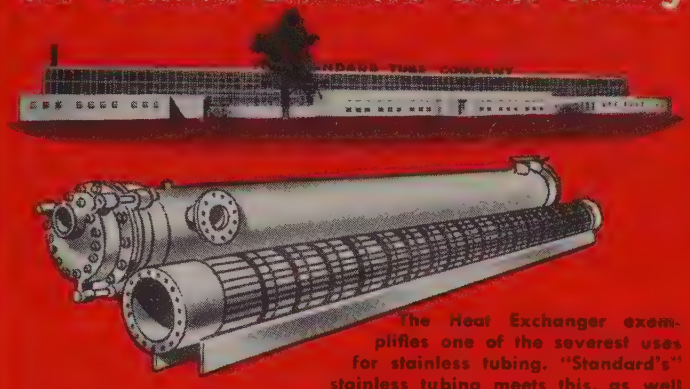
STAINLESS TUBING USERS WHO KNOW!

SPECIFY "Standard"
for Welded Stainless Steel Tubing



The Heat Exchanger exemplifies one of the severest uses for stainless tubing. "Standard's" stainless tubing meets this, as well as many other different requirements for strength, and heat and corrosion resistance.

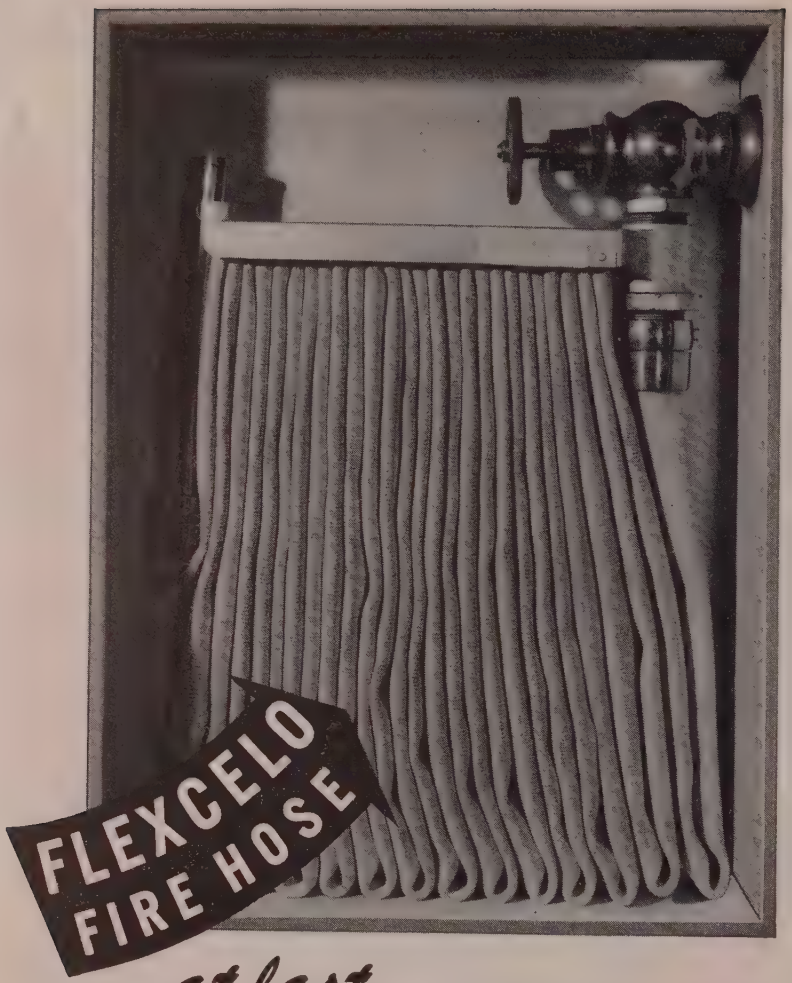
Deal with the Specialist among Specialists

A tubing specialist, like other specialists, knows his trade best.

When you deal with "Standard" you deal with a tubing specialist who manufactures millions of feet of tubing every month from stainless and carbon steel—and for 25 years has been serving all types of industry for mechanical and pressure tubing applications.

If you need stainless tubing, be sure you specify "Standard". It pays to deal with the tubing specialist among specialists.

Stainless Tubing Size and Thickness
⅜" O.D. to 3" O.D.
.028 to .095 wall
Carbon Steel Tubing
½" O.D. to 5½" O.D.
.028 to .260 wall



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COTTON-JACKETED, RUBBER-LINED FIRE HOSE FOR INSIDE USE

FLEXCELO . . . single-jacketed, cotton, rubber-lined fire hose is now ready for your cabinet or wall-type hose racks!

Thoroughly tested and approved by Factory Mutual Laboratories, **Flexcelo Fire Hose** gives you greater protection and vastly better service than any unlined hose you've ever used.

Flexcelo is easier to handle! It's easier to test and it's extremely flexible, even under pressure!

Because **Flexcelo** is a rubber-lined hose, there's never any leakage of water through the jacket. This reduces hose-drying problems and ends the nasty mess of getting water anywhere and everywhere but on the fire.

Flexcelo Fire Hose is available in 1½-inch size only in 25-,50-,75- and 100-foot lengths. Every length is treated with **Republic's exclusive Provar Process** for long-time protection against mildew and is furnished with brass expansion ring couplings attached.

Your Republic Distributor can help you plan, select, apply and maintain any Product of Industrial Rubber. If his name is not listed in the yellow section of your telephone directory, write us for his name and address.

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INDUSTRIAL RUBBER PRODUCTS

minum paint which reflects 90 per cent of heat. Gloves resist heat to 1600° F and the shoes are of asbestos. Fresh air is supplied by an air purifier and pressure reducer connected into the plant's compressed air line and is fed to the Acme wider vision, compressed air mask worn by the man.

From April 1st to July 7th, the suit was put to use seven times. Kidde engineers estimate it maintained production of 8,400 cylinders of various capacities and saved 335 hours of down time.

Bearings Roll at 600° F

They get periodic spray of oil and graphite on the run. Frozen bearing trouble is ended

FROZEN bearings in the wheels of overhead oven conveyor trolleys caused continuous trouble at Simmons Co., Elizabeth, N. J., manufacturers of mattresses. Bearing retainers roll into tempering ovens operating at 600°F and paint-baking ovens at 300°F.

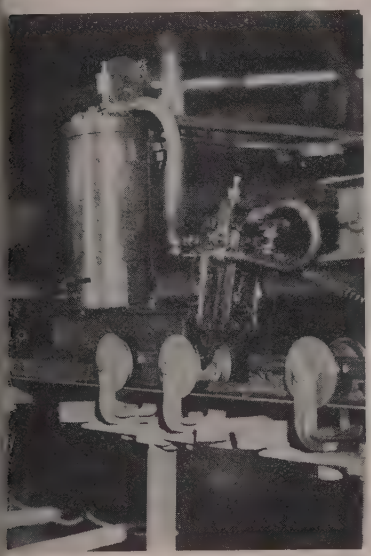
Ordinary lubricants tend to decompose or burn-off at these high temperatures. Simmons has found that Oildag, a dispersion of colloidal graphite in oil, is a lubricant unaffected by the temperatures required in their process and therefore successful.

Manual Finishing — Operators push the box springs, attached to the trolleys, into the oven for oil burn-off and spring tempering. The spring assemblies are then removed from the oven, dipped in paint and returned to it for 1 minutes at 300°F.

Four springs hang from each trolley. Two rails run into the oven. Because the Oildag reduces friction to a minimum, one operator can push as many as 40 empty trolleys at once along the rail to the loading station.

The System—Lubricant delivery system is composed of simple pipe parts and flexible neoprene hose running from the reservoir to the spray head. Inside blind bearing retainers are drilled in alignment with the spray head to permit entry of the colloidal graphite spray, and the walking beam arrangement used to trip the popper valves and position a twin nozzle

a simple lever design actuated the trolley wheels themselves. Made from a 6-inch pipe section, the lubricant reservoir is mounted over the tramrail. It contains a suspension of 9 per cent Oildag in Esso Mentor 28, which is sprayed into the bearings by plant air pressure on the reservoir. Oildag is a product of Acheson Colloids Co., Pt. Huron, Mich.



TROLLEY LUBRICANT SPRAYER
. . . tripped by passing wheels

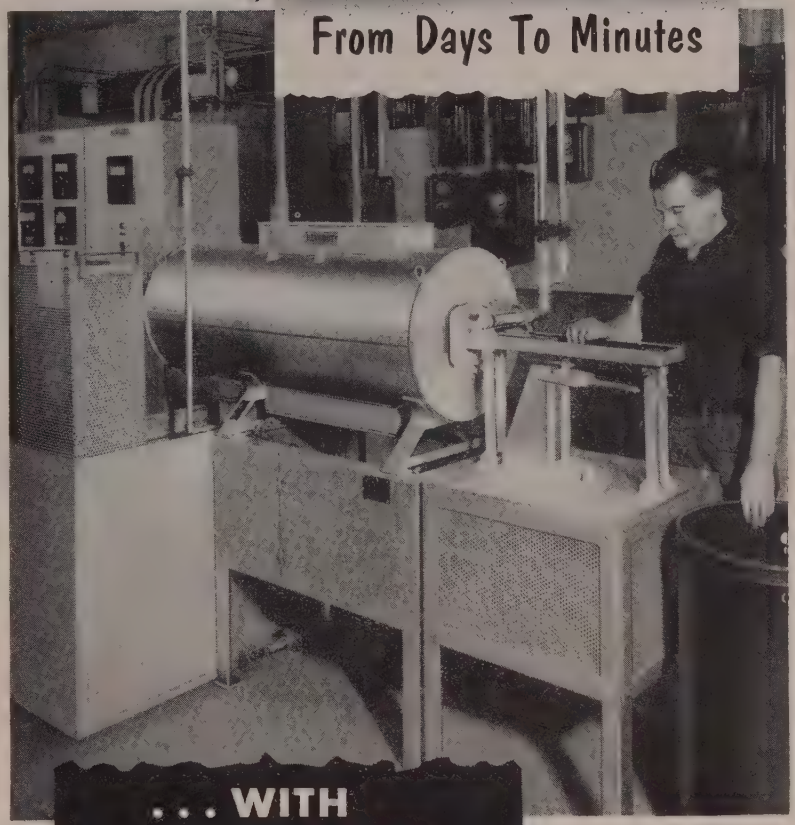
Spray head is positioned so that the colloidal graphite suspension sprays outward on both sides as the trolleys pass. The walking beam mounting permits the spray jet to ride forward with the pulleys. Timing of the poppet valve is adjusted through a tab tapped for a set screw on top of the beam.

Fork Truck Lifts, Pulls

Integrated fork truck-tractor-trailer system for use in small and medium sized plants, has been developed by Market Forge Co., Everett, Mass.

Fork truck may be used as a tractor for loading trailers or pulling them, by equipping it with a new medium-duty automatic coupler. Trailers are a modification of the company's standard 30 x 60-inch load-carrier units with standard superstructures and automatic couplers. Size is suited for maneuvering in narrow, intersecting aisles and congested areas.

Hardening Time Cut
From Days To Minutes



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HEVI DUTY
SHAKER HEARTH
FURNACE

Master Lock Company

SPEEDS PRODUCTION WITH THIS NEW FURNACE

Heat treating of an 80 pound batch of small springs required two days when hardening in charcoal filled containers. This process was not only slow but also costly due to a high percentage of rejects.

Now in a Hevi Duty Shaker Hearth Furnace, a similar batch is "bright" hardened in 75 minutes. Each spring receives uniform heat treatment without distortion thus cutting production costs. This furnace has been designed to solve your problem of heat treating small parts.

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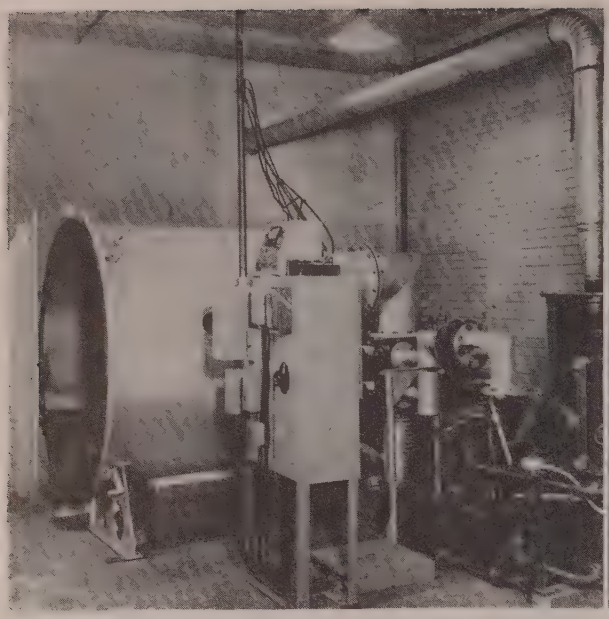
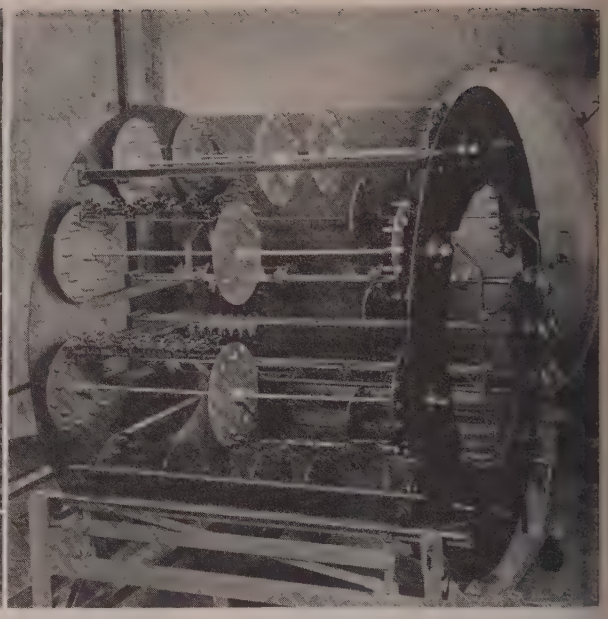
Learn more about this modern production tool and the way it can help you.
WRITE FOR BULLETIN HD-850.

HEVI DUTY ELECTRIC COMPANY
MILWAUKEE 1, WISCONSIN
Heat Treating Furnaces . . . Electric Exclusively
Dry Type Transformers *Constant Current Regulators*



Overall view of vacuum-coating unit, including coating chamber, diffusion pumps, mechanical vacuum pump and control equipment. Its production is limited to batch jobs



Jigs and fixtures support and rotate objects that are being coated. The coating material is attached to tungsten filament in center of jig between two electrodes

Vacuum Process Brightens Plating Picture

Thinly-coated film conserves usage of costlier metals. An added feature is that initial surfaces need not be bright. A lacquer undercoat is applied

By GEORGE A. GOETZ
Development Department
National Research Corp.
Cambridge, Mass.

POTENTIAL REPLACEMENT for coating methods demanding chromium, nickel, tin and other more costly metals is the vacuum process.

Under vacuum, relatively small amounts of coating materials are required. One pound of aluminum, for example, will coat 25,000 sq ft of surface. Resulting bright, highly-reflective coatings make for an attractive product. Available extras include colored or texture finishes and wear or abrasion-resistant coatings.

Advances in the vacuum process hark back to World War II. Lessons learned then opened up broad commercial applications dealing with metal-on-metal coatings, plastics and ceramics.

Catching On—Because of chromium and nickel shortages, metal-working industry has been sizing up the process for coating such items as automobile bumpers, window flashing and other exterior trim. Metal-on-metal coatings are now being used on stampings to produce light fixture bezels and other decorative products.

Other branches of the manufacturing world are jumping on the bandwagon. The electronics industry is using the process to coat condenser papers, printed circuits, aluminized lamp bulbs, TV picture tubes and selenium rectifiers. Other applications include sealed-beam headlights, flashlight reflectors, household mirrors, costume jewelry, ornaments, interior automotive trim, nameplates and medallions.

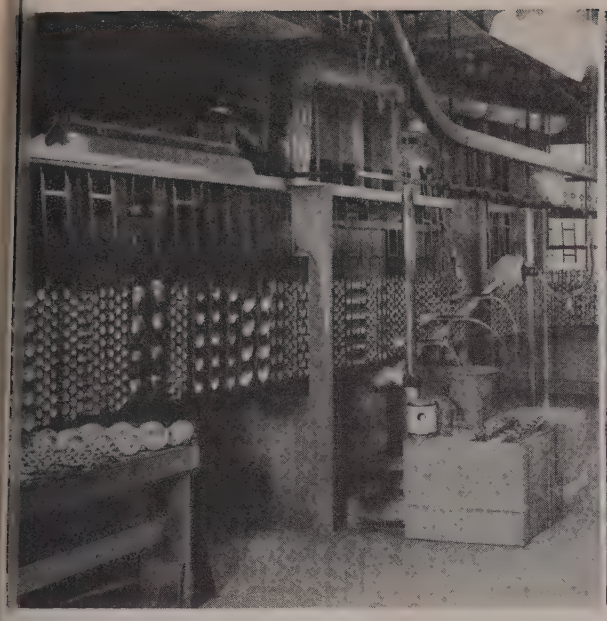
One, Two, Three—Vacuum coating is accomplished in three distinct steps: Evacuation, evaporation and condensation. Generally the coating chamber, containing material to be coated and the coating material, must be exhausted to less than one ten-millionth of an atmosphere.

This vacuum serves two ends 1. It enables vaporized molecules to travel directly to the material being coated without colliding with other molecules, such as air; 2 It enables vaporization of the coating material.

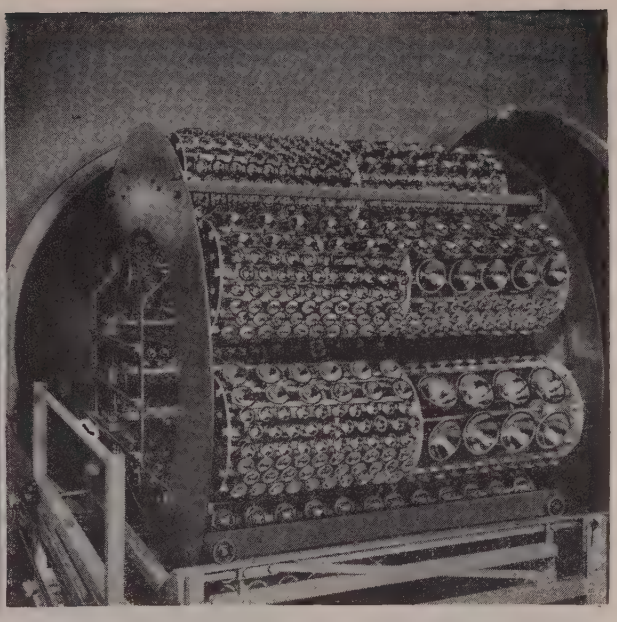
Wet Bombardment—Evaporation of the coating material is achieved by placing it at a particular point or source and heating it until it enters the gaseous phase. Gaseous molecules travel radially away from the source in a manner similar to light rays emanating from an electric light bulb.

Condensation takes place when hot coating molecules strike the relatively cool object being coated. Object being coated is at room temperature or slightly above.

Operating Tips—Of course, o



acquer undercoat prepares surfaces for vacuum coating. Here an overhead conveyor transports metal reflectors through an infrared electric enamel baking oven



Reflectors have been loaded on jig, which will be put into coating chamber. After chamber is evacuated, the metal evaporates, then condenses on the metal surfaces

jects being coated must be able to withstand a high degree of vacuum, and their surfaces must be directly in line-of-sight of the coating material source.

Basically, the process is limited to exterior coating, and when overall coats are not wanted, tape masks protect surface areas. The taping technique also may be used to create patterns.

Another factor to take into account is that the thinly-coated film directly reflects the quality of the surface it is deposited upon. If the goal is a highly reflective film, starting surfaces must be smooth and free of dimensional imperfections.

Big Point—One of the most desirable features of the process is that the initial surface doesn't have to be bright. Smooth surfaces on a die casting, for instance, are easily obtained by applying a coat of lacquer. Generally, this operation is cheaper than buffing or polishing. Roller-coating, spraying or dipping have proved satisfactory.

Another dividend of undercoating is good bond. Lacquer adheres to the object, fills surface imperfections, and metal coating adheres to the lacquer.

Thinness of the metallic coating generally dictates topcoating, since coats run from three or four millionths to several thousandths of an inch thick. Where wear or abrasion resistance enter the picture, topcoats also may be necessary. Often, however, the metallic coating itself is sufficient.

Equipment—A vacuum unit has several parts: Pumping system, coating chamber, source of coating material, method of heating coating material, jigs and fixtures to hold objects and accurate gages and controls to definite operating conditions.

High-speed pumping systems consisting of rotary vacuum pumps and high-vacuum diffusion pumps quickly evacuate the chamber to working pressure.

National Research Corp., Cambridge, Mass., recently introduced a pumping system, including an oil-diffusion pump and a rotary gas-ballast pump, that eliminates many pumping problems causing long down times.

Chambers — Coating chambers come in several sizes. Large production units have chambers going to 5½ feet in diameter and 4 feet long. Care must be taken in construction to insure against leaks that hamper or prevent pumpdown.

Positioning and method of heating the source are of critical importance. Tungsten filaments, carbon boats and ceramic crucibles are used to hold such coating materials as aluminum, zinc, gold, silver and inorganic salts. Heating is of the resistance or inductance types.

Jigs and fixtures to hold objects are designed for particular applications. Rotating jigs accomplish multi-surface coatings. Since pressure tolerances are close, gages should read total pressure and react instantly to changes.

Prospects—At this stage of the game, vacuum coating is limited to batch jobs. Continuous operation is simulated by employing several jigs, so the operator can unload and load one jig while others are in process.

However, mass production may be around the corner. It is reported that continuous applications are being accomplished on 6000-foot rolls of flexible materials, such as plastic sheets, fabric and thin metal.

Budgetwise, vacuum coating equipment has been developed to the point where it is inexpensive and can be operated with semi-skilled labor. Power and labor are the only operating costs; consumption of coating materials is almost negligible.

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SUNDSTRAND

Arc Melting As A Lab Tool

Small furnaces permit atmosphere melting with high purity results in test buttons

DEVELOPMENT of methods of refining the highly reactive metals, titanium and zirconium, during the past few years has made it essential that new melting techniques be developed. Chief new production method that has risen with the development of these metals is arc melting, and its use as a laboratory tool is also now firmly established.

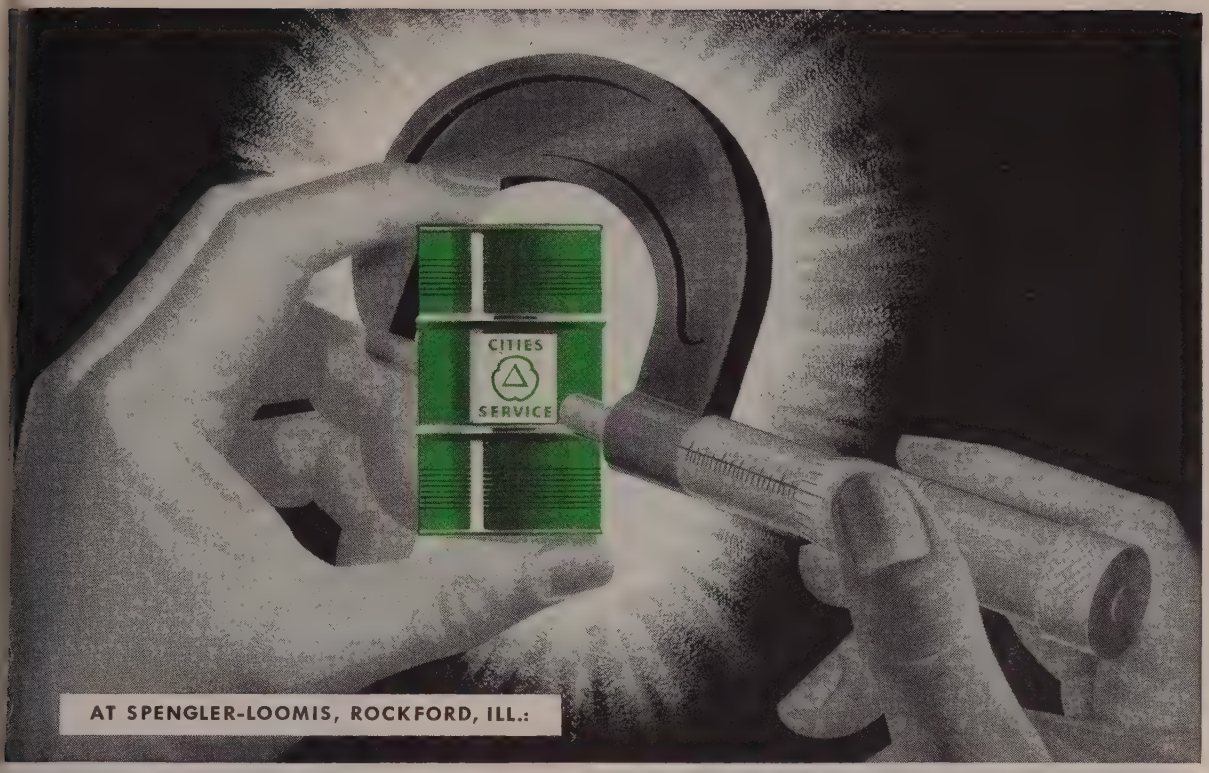
Arc melting, as it is considered here, consists of melting a material in an inert atmosphere where the arc is maintained between an electrode and the material being melted. This type of melting is different from the electric-arc process used in melting steels which is generally an indirect arc method.

Description—Essential features of the furnace are the shell, the crucible or hearth, the electrode assembly, and the auxiliary equipment.

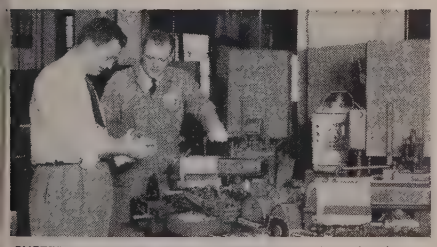
Furnace shell is machined from a copper billet, the inside dimensions of which are 5 inches in diameter and 7 inches in depth. To this shell are brazed the sight tube, the vacuum take-off tube, a water-cooling jacket on the base, and a brass flange with an "O" ring groove at the top.

Hearth is a block of copper 4⅞ inches in diameter and 1½ inches high, and it is easily removed from the furnace for cleaning or replacing. Shallow depressions machined into the top surface of the hearth are the ingot chambers. Other types of hearths can also be used in this furnace, the chief differences being in the size and shape of the depressions.

Water-Cooled—The electrode assembly consists of a water-cooled copper electrode with a tungsten tip. A brass bellows, soldered at the top to the electrode and at the bottom to the cover plate, provides a vacuum-tight seal while permitting both horizontal and vertical movement of the electrode. The only seal between the electrode assembly and the furnace shell is an "O" ring. No clamps are needed because the furnace is operated at



Cities Service Cutting Oils Proved The Very Best By Micrometer Test!



CUTTER MEASURED WITH MICROMETER. As a final test, Automatic Pencil Sharpener measures each cutter with a micrometer. All tests proved that Cities Service cutting oil was absolutely tops for this really tough job.

STRICT SPECIFICATIONS REQUIRE FINEST CUTTING OIL. APSCO Sharpeners offer many more features than other brands. To produce their top quality product, Spengler-Loomis relies on top-quality lubrication products . . . Cities Service Products, famous throughout industry.

ONLY .005 INCHES BURR OR BUILD-UP ALLOWED IN FIFTY-HOUR OPERATION CUTTING GROOVE IN B1112 STEEL!

Says Mr. C. J. Kostrzewa, Plant Superintendent: "Cutting oil requirements in our Automatic Pencil Sharpener Division are tough. To find the right coolant, we called for, and tested, samples from various companies. Over a period of testing time, we used graphs, charts and tables, keeping a running record on all coolants. As a final test, we measured the cutter with a micrometer before and after milling. The cutting oil that came out tops was Cities Service.

"I'd also like to point out that the Cities Service Engineering staff co-operated fully by offering helpful advice and excellent service."

Why not discuss your lubrication problems with a Cities Service lubrication engineer? Write Cities Service Oil Company, Dept. H18, Sixty Wall Tower, New York 5, New York—or contact your nearest Cities Service office.

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QUALITY PETROLEUM PRODUCTS

Your STEEL MILL
FROM BLUE PRINT
TO OPERATION
. . . with UNDIVIDED responsibility

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PORTSMOUTH, OHIO
Designers and Builders
Pittsburgh Engineering and Machine Company

Newly developed Mandrel type up-coiler (eliminates under-floor installation)

Pittsburgh Engineering and Machine Company's years of experience in the design and building of heavy mill machinery and auxiliary equipment guarantees unexcelled performance and years of trouble-free operation.

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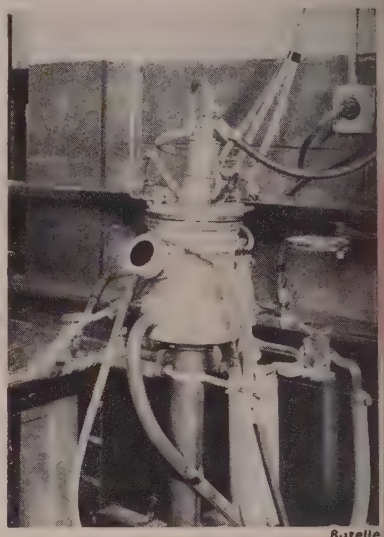
ENGINEERING
& MACHINE CO.

319 Farmer's Bank Bldg., Pittsburgh 22, Pa. • Plant at Glassport, Pa.

DIVISION OF PITTSBURGH STEEL FOUNDRY CORP.

a partial pressure, and atmospheric pressure is sufficient to provide a vacuum-tight seal. The "O" ring is the only electrical insulation between the electrode and the copper hearth.

Auxiliary equipment used with this type of furnace consists of a mechanical vacuum pump for evacuating the furnace, a McLeod gage, an argon- or helium-inlet tube, and a dc welding generator as the power source. Line to the vacuum pump includes a dry ice—alcohol cold trap and a stopcock. Although no elaborate vacuum system is needed with this type of furnace, it is essential that the system be leak-proof.



Batelle

LAB-SIZE ARC FURNACE
. . . high purity test buttons

Where It's Used—Chief use of the hearth-type furnace is in melting laboratory-size melts of the reactive or refractory metals so that they may be evaluated for metallurgical properties. Initially, the furnace described above was used for melting titanium and titanium alloys, but it has also been used successfully for melting zirconium, vanadium, chromium, molybdenum, thorium, uranium, rhenium, and also the more common metals like iron and manganese.

Ingots or buttons of these elements or alloys weighing from as little as 1 gram up to about 50 grams can be melted without contamination of the melt with unwanted impurities. The exculsion

NEW ARITHMETIC
FOR COST-MINDED EXECUTIVES

1 + 1 = 1 BROWNHOIST

1 SWITCH ENGINE + 1 (LOCOMOTIVE-CRANE) = 1 BROWNHOIST DIESEL ELECTRIC LOCOMOTIVE-CRANE

Many railroads, steel mills and manufacturing plants have long been familiar with the powerful, efficient performance of Brownhoist Diesel Electric Locomotive-Cranes in handling bulk materials with magnet, hook or bucket. Brownhoist Cranes also perform equally well as switch engines because they are built with a specially designed travel generator, motor and axle reduction unit — the same equipment used in modern switching locomotives to provide high tractive power and rapid acceleration. These two dependable pieces of equipment in one husky unit mean greater versatility and economy of operation.

Brownhoist Cranes save you man hours, production time and money. The patented Monitor Type Cab and Clear-Vision Boom give the operator unlimited visibility in all directions and help him turn out a greater volume of work in less time. Sound, rugged construction plus a simplified mechanism and easy accessibility to all moving parts help keep maintenance and repair costs low.

Brownhoist Cranes are built in capacities from 25 tons to 80 tons for virtually every heavy duty materials handling operation. For complete information, consult your nearest Brownhoist representative or write us today.

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166

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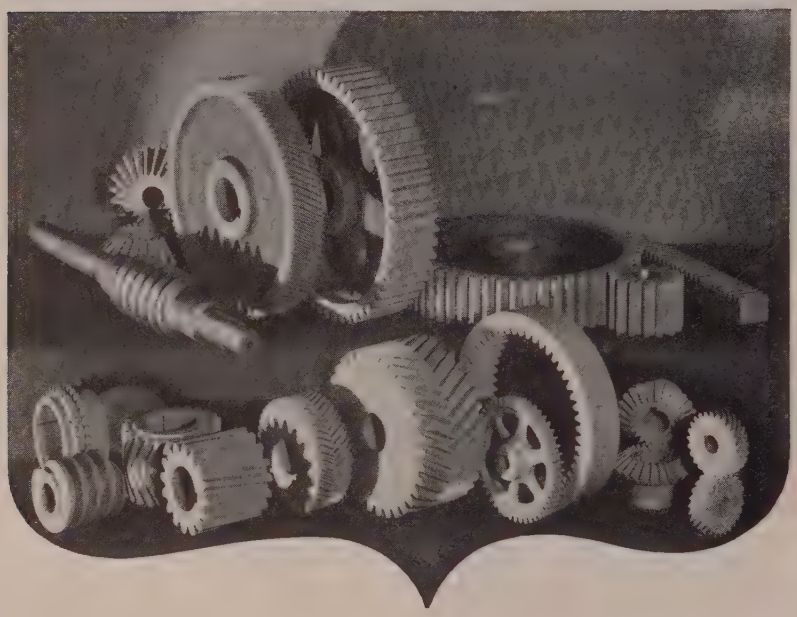
for every purpose from

an ounce **to 20,000 lbs.**



• Whether you require Spur, Spiral, Herringbone, Bevel, Mitre, Internal or Worm Gears—Worms or Non-Metallic Pinions... here they are... the finest made. For over a half century Horsburgh & Scott has specialized in making gears that represent the best in engineering design, accurate workmanship and fine materials. Economical too, for they are standardized and built to endure. With a complete line of all types and sizes . . . here's one source for all gears and gear products.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U. S. A.

Send note on Company Letterhead for 488-Page Catalog 49

First 330-kv Network

Circuit breaker for the nation's first 330-kv power transmission network is unloaded at Beverly, O. The 80-ton General Electric breaker is more than 11 feet in diameter, has 3550-gallon oil capacity. It is one of three to be installed this fall at the Muskingum River plant of the Ohio Power Co

of atmospheric gases eliminate the pickup of unwanted oxygen and nitrogen, while melting on the water-cooled hearth prevents pick up of impurities that might be obtained from the more common crucible materials.

Remelts Necessary — However the use of the water-cooled heart prevents complete fusion of th melt. Only about 2/3 to ¾ c the charge is melted in one meltin cycle, and, to achieve complet melting through, the ingot is turn ed over and remelted. Two c more such melting cycles are re quired on the same ingot. Sinc the successive melt zones overla on remelting, homogeneity achieved by a process of succe sive approximations.

The more times the ingot turned over and remelted, the clos is the approach to homogeneit In general, it has been found th three melts are sufficient to pr duce homogeneous alloys so lon as the melting point of the alloyin addition is not much greater tha the base metal. When large di ferences in melting points of th two elements being alloyed occu it is necessary to use more r melts.

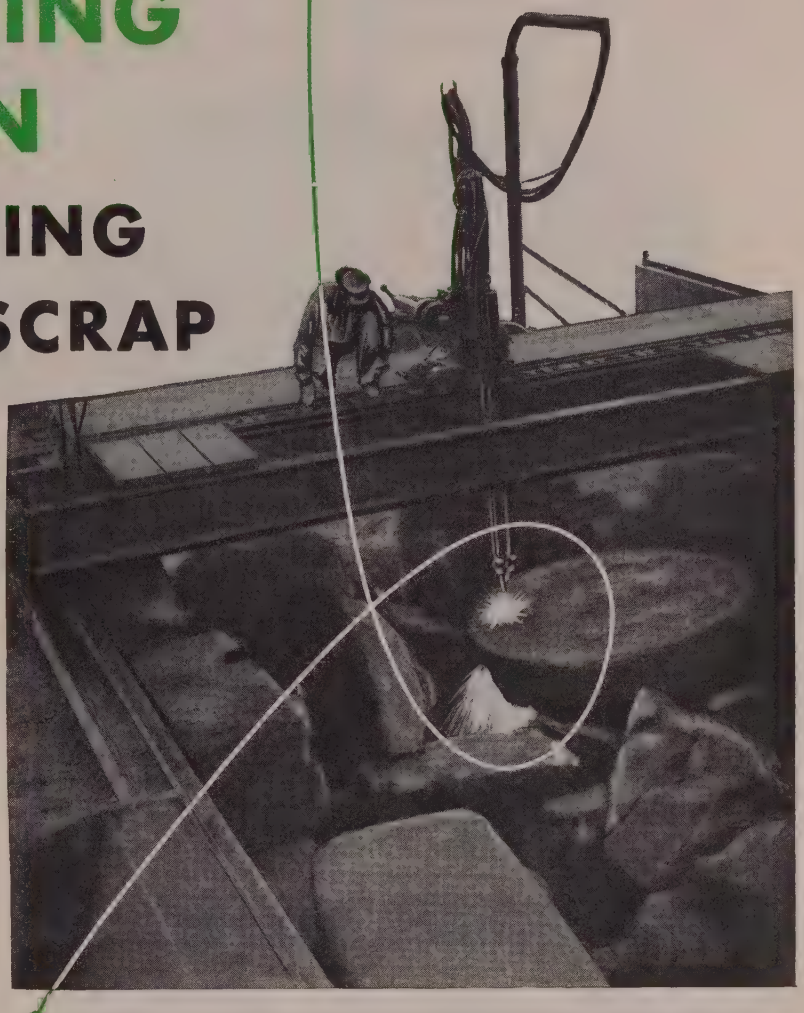
It is sometimes desirable to a

How LINDE SERVICE*...and Oxygen

ARE SAVING $2 A TON IN PREPARING FURNACE SCRAP

Preparing heavy steel scrap for open hearth furnace charging usually meant hauling the big pieces away to a safe place for blasting apart.

To speed up scrap preparation, LINDE developed an improved cutting blowpipe, called the C-60. In one mill, alone, this blowpipe, combined with new handling methods, now prepares about 2,500 tons of scrap a month. Savings have consistently been $2.00 or more per ton over previous methods. In all, this is saving about $60,000 a year for this mill.



LINDE-designed oxygen cutting tools, such as this C-60 cutting blowpipe, are helping many mills save time and money in steel making. Sound engineering advice on problems of furnace tapping, surface conditioning, cutting, scrap preparation, and maintenance are provided by LINDE SERVICE.

***LINDE SERVICE** is the unique combination of research, engineering, and more than 40 years of accumulated know-how that is helping LINDE customers save money and improve production in their uses of oxygen and oxy-acetylene processes.

If your company uses oxygen, LINDE SERVICE *can mean dollar savings to you. Let us tell you more about it.*

LINDE AIR PRODUCTS COMPANY
A Division of UNION CARBIDE AND CARBON CORPORATION
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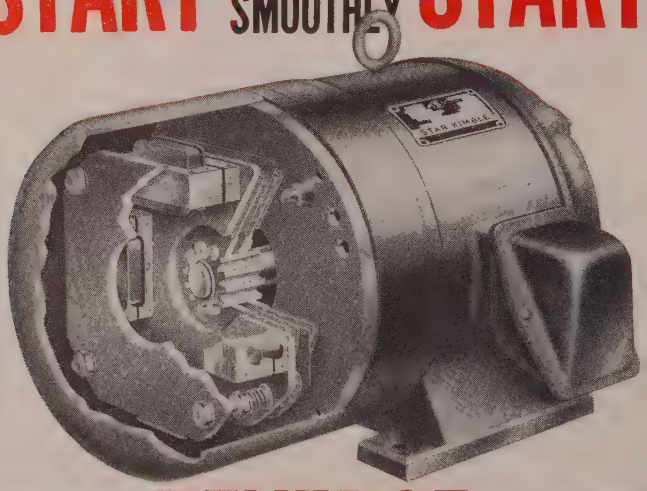
Linde Trade-Mark

STOP FAST STOP FAST STOP
START SMOOTHLY START



FREQUENTLY REVERSE FREQUENTLY
POSITIVELY HOLD POSITIVELY

with Star-Kimble Brakemotors

Motor *and* connected load come to a split-second stop—because of the extra-large brakelining area of a Star-Kimble Brakemotor.

Motor starts smoothly—without drag—because small air gap assures instantaneous brake release.

No plugging needed for rapid, repeated reversals. Frequency of reversals can often be *tripled,* compared with conventional plugging methods.

And loads are held positively by the brake that holds its grip through millions of cycles—with little or no adjustment.

Every Star-Kimble Brakemotor is an integral, space-saving unit with a sturdy shaft that's common to motor and brake. Bearings and brake-linings last longer. One manufacturer—one responsibility.

For information on design and service features, write for Bulletin B-501-A

STAR-KIMBLE

MOTOR DIVISION OF
MIEHLE PRINTING PRESS AND MFG. CO.

220 Bloomfield Avenue Bloomfield, New Jersey

intentionally controlled amounts of oxygen and nitrogen to an alloy. This can be done either by direct addition of an oxygen or nitrogen compound of the base metal being melted or by adjusting the melting atmosphere so that the quantity of oxygen or nitrogen desired is picked up during melting.

Intermetallics—It has also been found that some intermetallic compounds can be produced by arc melting. This is particularly useful when preparing compounds which have melting points higher than either of the two elements involved. An example of this is the compound AlSb which melts congruently at about 1050° C, much higher than the melting points of aluminum or antimony. This compound and others have been prepared satisfactorily by arc melting.

Standard ingot that is formed when arc melted in this furnace is in the shape of an oblate spheroid hence the name button. The size, particularly the height, of the button is dependent upon the surface tension of the material being melted.

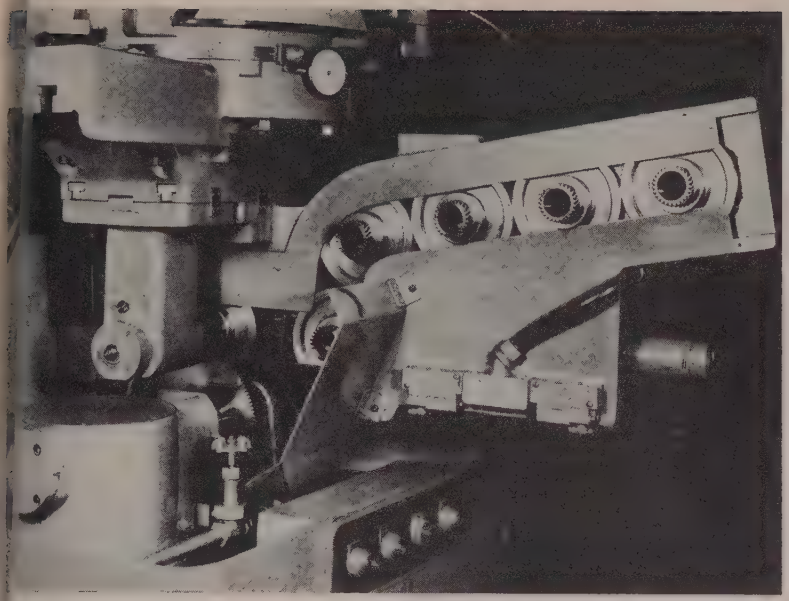
Other shapes can be formed by altering the size and shape of the depressions in the copper hearth. Complicated shapes cannot be made, but such shapes as miniature bars for subsequent wire drawing and tall ingots for forging are possible.

New Emulsifiers For Machining

Three major requirements for water solubles have been combined for the first time in two water emulsifiable products designed for high speed machining according to Van Straaten Chemical Co., Chicago.

Combined into each of the solubles are the characteristics which give (1) superior wetting and high penetration, which makes them good heat exchange elements, (2) good lubrication which reduces frictional heat, and (3) lubrication of moving parts of machines for high speed operation which prevents binding and eliminates maintenance problems.

Products are Vantrol 5491A and Vantrol 554-H. The latter is a change in a previously existing product which the company states improves it 25 per cent.



cylinder at right feeds gears into shaving position one at a time. Air-erated expanding mandrel (not shown) clamps parts into shaving position

houlder Gear Shaver Is Fully Automatic

Standard Underpass machine with automation features turns out one helical automotive shoulder gear every 15 seconds. The 6¼-inch flange doesn't slow this steady pace

VEN a 6.250-inch flange doesn't ow up production of automotive houlder gears on an automation-quipped Underpass gear shaver. ne shaved helical shoulder gear very 15 seconds is the pace main-ained by this conveyorized setup ith fully automatic operation.

Basic machine is a Model 870 Underpass gear shaver built by Michigan Tool Co., Detroit, tooled up for fully automatic operation. All the operator has to do is load the hopper. The rest of the cycle, including pre-inspection of gears, is automatic. A sizing fixture at the hopper mouth rejects oversize gears, thus providing automatic quality control through the operation.

Gravity Feed—Gears move down the trough by gravity until they reach loading position. Here an air cylinder takes over and feeds the gears into shaving position, one at a time. The shoulder of the incoming gear pushes against the shoulder of the shaved gear, causing the latter to eject at the completion of the shaving cycle. Gear teeth themselves never touch, so there isn't any possibility of damage to the finished gear.

An air-operated expanding mandrel clamps the incoming gear and holds it during shaving. Positioning of the gears has proved so positive that a safety device, provided for automatically ejecting any gear not properly aligned with cutters, has not come into operation at any time during production test runs. Release at the end of the machine cycle is automatic. The 27-tooth helical gears have a 2.0257-inch pitch diameter with a 0.734-inch face width. Normal pressure angle is 18 degrees 30 minutes with a 17 degree 49 minute 6 second left hand helix angle.

Mesh Conveyor — Ejected gear rolls down a trough at the back of the machine and lies over gently, flange down, on a wire mesh conveyor used to transfer the gear to the next operation. A short guide rail extending beyond the end of the exit trough and the weight of the flange combine to position each gear perfectly on the

an ACCO product WIRE

ROUND FLAT OR SHAPED

PAGE makes them all...

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STAINLESS
SPECIAL ALLOY
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YOU draw the Shape
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Tell us the way *you* want it. We'll follow *your* specifications.

Cross-sectional areas up to .250" square; widths up to ⅜"; width-to-thickness ratio not to exceed 6 to 1.

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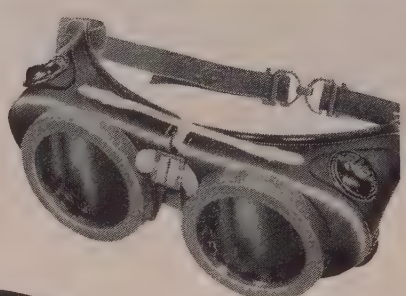
Try this pair of nylons for longer, more comfortable service!

WILLSON®
Kover-Mor goggles
Strong...Light...Comfortable

For Weldors ▶

Willson *Spatterproof*® cover glass protects *Willson-Weld*® filter glass against pitting. (*Note* four indirect ventilating ports admit ample air but keep out sparks and flashes)

Style CW 70



Style CC 70

◀ For Chippers

Willson *Super-Tough*® lenses are heat-treated for impact resistance. (*Note* four screened eye cup ports admit air to keep lenses fog-free)

Kover-Mor Welding and Chipping Goggles fit easily over larger-frame prescription glasses—use standard 50 mm. round lenses—offer these other new Willson developments:

1. Lightweight nylon offers *highest strength/weight ratio* known for goggle cups; non-flammable; won't conduct heat

2. External screw caps permit *easier lens* changing—no springs or clamps to remove

3. Standard 50 mm. round lenses make it unnecessary to stock odd-size replacement lenses

4. Extra ventilation is provided by slots in screw caps plus ports in cups

5. *Rigid metal top bar* makes Kover-Mor Goggles easier to handle; keeps them firmly in place

Ask your Willson distributor for new Kover-Mor* Welding or Chipping Goggles — strongest lightweight goggles you can get — or write for new bulletin.

Easy to get anywhere!

*Trademark

More Than 300 Safety Products Carry This Famous Trademark
WILLSON®
Established 1870

WILLSON PRODUCTS, INC., 233 Washington St., Reading, Penna.

conveyor. Completed gears move down the length of the wire mesh conveyor and empty onto a parts table to complete the operation.

This high production rate is achieved on a standard Michigan Tool 870 Underpass gear finisher. Should the automation-equipped machine be needed for shaving other gears, it may be converted to standard operation by removing the automatic loading mechanism and controls.

New Tank Standards

Manufacture of new standard tanks for storage of materials at atmospheric or low pressures has been announced by the jobbing division of Aluminum Co. of America.

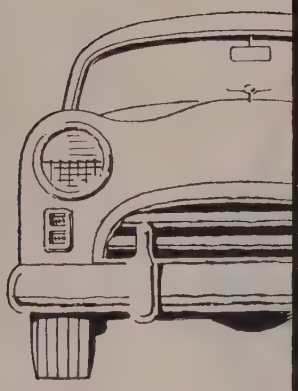
With this move, raw tank materials will be stockpiled and delivery time may be cut up to 80 per cent resulting in lower material and labor costs. Previously all tanks were tailor-made to customer specifications with materials ordered as needed.

Capacities—Tanks are made in capacities ranging from 5800 to 16,400 gallons and are of both horizontal and vertical types. All tanks, 10 feet in diameter, are made from ¼-inch, welded 3-S aluminum alloy.

Horizontal tanks come in capacities of 6,400, 11,400 and 16,400 gallons. The vertical tanks designed to be supported on a flat base come in capacities of 5,800, 10,800 and 15,800-gallon capacity. Vertical tanks designed to be supported on six legs come in capacities of 6,400, 11,400 and 16,400 gallons.

Covers—All these tanks can be equipped with a 20-inch (inside diameter) manhole, either of the fixed or swing type. The hinged cover can take no internal pressure and is not vapor proof. The other—or fixed type—can take some pressure.

Also, standard welded neck connections can be had with small added cost. These neck connections come either in the Van Stone connection—which has a movable steel flange and can easily be aligned with the opposing flange on adjacent piping—or the welded neck which has an integral flange



This intricate maze of metal is the valve section of a popular automatic transmission, cast in Gray Iron.

6 Reasons why the final choice was GRAY IRON!

1. Greater rigidity, strength and dimensional stability
2. Greater accuracy—can be held to closer tolerances
3. Greater wear resistance
4. Does not permit dirt to imbed, as do the softer nonferrous materials
5. Desirable thermal expansion characteristics
6. Economy

Intricate components such as the section shown here are economically practical only as integral castings. The final question then becomes—in what material shall they be cast?

This valve section was first experimentally cast in a nonferrous material. However, the final choice was Gray Iron, for the practical reasons listed at the left. These same basic advantages of Gray Iron could well apply to one of *your* current design problems.

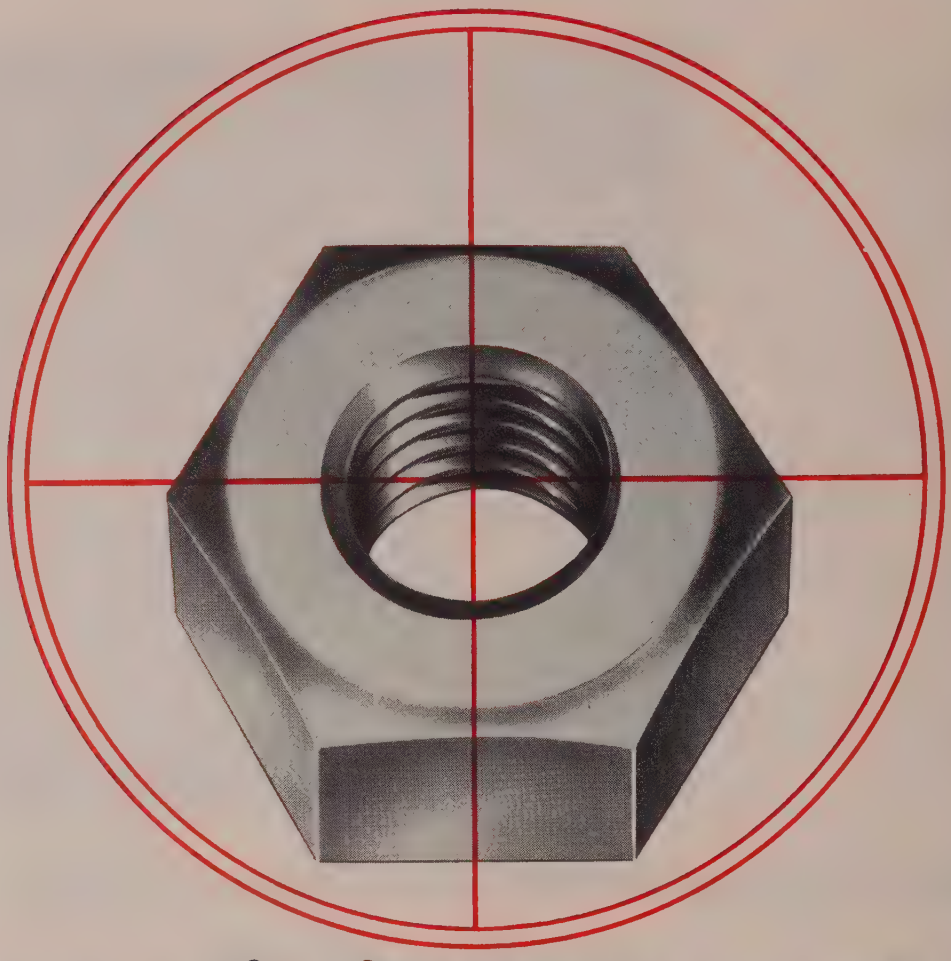
Write for technical information on the many advantages of the Gray Iron casting process.

Make it Better with Gray Iron

Second largest industry in the metal-working field

GRAY IRON FOUNDERS' SOCIETY, INC.

NATIONAL CITY-E. 6th BLDG, CLEVELAND 14, OHIO



Aiming for Better Production?

J&L SCRAPLESS NUT WIRE CAN'T BE BEAT

Scrapless nut production is a tough business. It takes the best in know-how, the best in equipment and the best in wire.

You supply the production know-how and equipment and J&L will supply scrapless nut wire that's *right*.

When we say *right*, we mean scrapless nut wire that has the—

SURFACE QUALITIES
WORKABILITY
UNIFORMITY
FINISH

. . . to increase die life, reduce down time and boost your over-all production of a better finished product.

J&L Steel wire is quality controlled from the mine through the finished product. J&L has the modern equipment to produce a really uniform high-quality product. J&L has the steel-making experience to provide a dependable source of supply.

The result—you'll find that J&L scrapless nut wire can't be beat. Why not investigate its economies now? Contact the J&L representative nearest you or write: Wire Products Department, Jones & Laughlin Steel Corporation, 401 Liberty Avenue, Pittsburgh 30, Pa.

BEGINNING A SECOND CENTURY OF PROGRESS 1853 J&L STEEL 1953

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH

J&L STEEL

STEEL
August 17, 1953

Market Outlook

ONE of the worst bottlenecks in the supply of steel is beginning to crack.

It well may herald the return soon of a ready availability of most forms of steel.

LOOSENING UP—The bottleneck now yielding is hot-rolled carbon steel bars. They are the most universally used form of steel: Almost every end product made of steel contains some amount of a hot-rolled bar or its descendant, the cold-finished bar. Most likely they will be of the common variety, carbon steel.

This universal use along with military demand for bars for ammunition production accounts for the demand that has exceeded supply for almost three years.

BROAD BASE—The easing in pressure is stemming not from one single consuming area but from many segments. This easing must not be interpreted as a falling apart of the bar market. The pressure for hot-rolled bars, particularly the larger sizes, has been so intense that there could be a considerable easing and still a strong demand would exist. A majority of consumers still indicate they want full quotas of hot-rolled bars for fourth quarter.

Improvement that may be indicated in steel availability by the easing in hot-rolled carbon bars should not be looked upon as a catastrophe. A balance would be welcomed by steel consumers and steel producers alike.

RECORD BREAKERS—In an effort to make enough steel to fill the demand, steel producers have been, and still are, increasing their production capacities. In addition, they have been utilizing their facilities to a high degree. Another proof of this is their new July production record. The new record, set last month, is 9,284,000 net tons of raw steel.

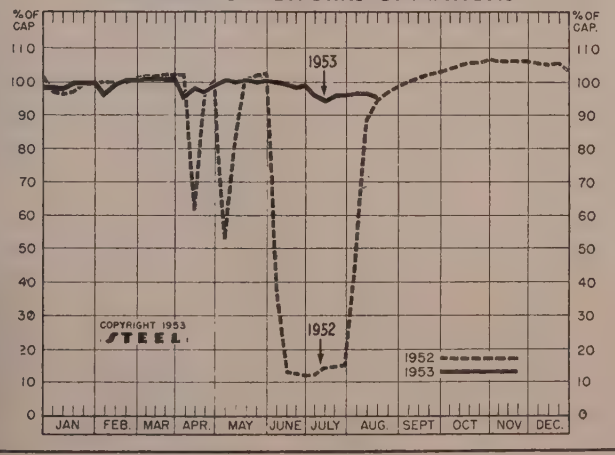
Steel output eased slightly in the week ended Aug. 15, largely because of repairs to furnaces. The easing from the preceding week was 0.5 point, resulting in a rate of 96 per cent.

NEW TWIST—Now that there are increasing signs of a balance between demand and supply of steel, steel buyers are being urged by the National Association of Purchasing Agents to support a drive for a firm-price policy in the pricing of steel. The association says: "Most steel consumers are either entering or are already in a highly competitive situation. The consumer, therefore, finds it necessary to quote firm prices even though contracts may extend over a long period. For many, the recent price increases could not be passed on to users of the end product. This entire situation is incompatible with the steel industry's price-at-time-of-shipment policy."

PROPHETIC?—Other reflections of an easing in the demand for steel include a softening of prices of steel scrap, a vital raw material in steel production. Prices had risen in July. In one area, scrap brokers dropped their buying prices in expectation of a lower consumer market in September.

HOLD ON—But don't rush to the phone to ask your steel supplier why a shipment of steel hasn't arrived. Lush days for buyers aren't here yet. Cold-rolled carbon sheets are well booked up; structurals, particularly wide-flange beams, are not easy to come by; and if you have some plates, don't tell anybody, someone else may want them.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended Aug. 15	Change	Same Week 1952	Same Week 1951
Pittsburgh	96	+ 1*	90.5	98
Chicago	101	+ 2.5*	98	105
Mid-Atlantic	96	— 0.5	87	100.5
Youngstown	103	— 3	90	105
Wheeling	95.5	— 1.5*	89	98.5
Cleveland	102.5	— 1.5*	100	101.5
Buffalo	106.5	...	109	104
Birmingham	94.5	— 1	97	100
New England	90	...	80	90
Cincinnati	91	+ 2.5	50	106
St. Louis	103	...	104	91.5
Detroit	106	...	103.5	106
Western	102.5	— 1.5	102.5	104
Estimated National Rate	96	— 0.5	94.5	102

*Change from preceding week's revised rate.
Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

e Metalworking Outlook—p. 59 Technical Outlook—p. 109

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Aug. 11, 1953

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, standard, No. 1	$4.400	Bars, H.R., alloy	$8.675	Strip, C.R., stainless, 430 (lb)	$0.415	Tin plate, hot-dipped, 1.25 lb	$8.433
Rails, light, 40 lb	5.767	Bars, H.R., stainless, 303 (lb)	0.418	Strip, H.R., carbon	5.113	Tin plate, electrolytic, 0.25 lb	7.133
Tie plates	7.250	Bars, H.R., carbon	4.850	Pipe, black, buttweld (100 ft)	14.454	Black plate, can making quality	6.233
Axles, railway	7.250	Bars, reinforcing	4.775	Pipe, galv., buttweld (100 ft)	17.895	Wire, drawn, carbon	7.713
Wheels, freight car, 33 in. (per wheel)	47.000	Bars, C.F., carbon	7.860	Pipe, line (100 ft)	141.960	Wire, drawn, stainless, 430 (lb)	0.545
Plates, carbon	4.550	Bars, C.F., alloy	11.075	Casing, oil well, carbon (100 ft)	149.516	Bale ties (bundle)	5.653
Structural shapes	4.383	Bars, C.F., stainless, 302 (lb)	0.433	Casing, oil well, alloy (100 ft)	214.113	Nails, wire, S d common	7.530
Bars, tool steel, carbon (lb)	0.415	Sheets, H.R., carbon	4.765	Tubes, boiler (100 ft)	‡	Wire, barbed (80-rod spool)	6.847
Bars, tool steel, alloy, oil hardening die (lb)	0.505	Sheets, C.R., carbon	5.904	Tubing, mechanical, carbon (100 ft)	‡	Woven wire fence (20-rod roll)	16.174
Bars, tool steel, H.R. alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.094	Sheets, galvanized	7.015	Tubing, mechanical, stainless, 304 (100 ft)	‡		
Bars, tool steel, H.R. alloy, high speed W18, Cr 4, V 1 (lb)	1.730	Sheets, C.R., stainless, 302 (lb)	0.548				
		Sheets, electrical	9.183				
		Strip, C.R., carbon	7.371				

‡Not available.

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Aug. 11 1953	Aug. 4 1953	Month Ago	July Average
(1947-1949=100)	141.7	141.7	141.7	141.7

STEEL's FINISHED STEEL PRICE INDEX

(Calculated by STEEL)	Aug. 13 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	189.38	189.38	189.33	181.40	143.08
Index in cents per lb.	5.130	5.130	5.129	4.914	3.876

STEEL's ARITHMETICAL PRICE COMPOSITE*

	Aug. 13 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT	$115.56	$115.56	$114.88	$111.66	$95.05
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	55.04	44.30
Basic Pig Iron, GT	56.04	56.04	56.04	54.66	43.86
Malleable Pig Iron, GT	57.27	57.27	57.27	55.77	44.68
Steelmaking Scrap, GT	44.17	44.08	43.42	43.00	43.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Aug. 13 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95	3.45
Bars, H.R., Chicago	4.15	4.15	4.15	3.95	3.35
Bars, H.R., del. Philadelphia	5.302	5.302	5.302	4.502	3.79
Bars, C.F., Pittsburgh	5.20	5.20	5.20	4.925	3.95
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.25
Shapes, Std., Chicago	4.10	4.10	4.10	3.85	3.25
Shapes, del., Philadelphia	4.38	4.38	4.38	4.13	3.48
Plates, Pittsburgh	4.10	4.10	4.10	3.90	3.50
Plates, Chicago	4.10	4.10	4.10	3.90	3.40
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.35	3.75
Plates, Sparrows Point, Md.	4.10	4.10	4.10	3.90	3.45
Plates, Claymont, Del.	4.55	4.55	4.55	4.35	3.95
Sheets, H.R., Pittsburgh	3.925	3.925	3.925	3.775	3.275
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775	3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775	4.20
Sheets, Galv., Pittsburgh	5.275	5.275	5.275	5.075	4.40
Strip, H.R., Pitts.	3.975-4.425	3.975-4.425	3.975-4.425	3.75-4.00	3.275
Strip, H.R., Chicago	3.925	3.925	3.925	3.725	3.275
Strip, C.R., Pittsburgh	5.45-5.95	5.45-5.95	5.45-5.95	5.10-5.80	4.00
Strip, C.R., Chicago	5.70	5.70	5.70	5.35	4.125
Strip, C.R., Detroit	5.45-6.05	5.45-6.05	5.45-6.05	5.30-6.05	4.20
Wire, Basic, Pitts.	5.475-5.525	5.475-5.525	5.475-5.525	5.10-5.225	4.15
Nails, Wire, Pittsburgh	6.35-6.55	6.35-6.55	6.35-6.55	5.90-6.35	5.15
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$6.70

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$75.50	$75.50	$75.50	$70.50	$61.00
Wire rods, 7/32-9/32", Pitts.	4.525	4.525	4.525	4.325	3.45

PIG IRON, Gross Ton	Aug. 13 1953	Week Ago	Month Ago	Year Ago	5 Yrs Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$55.00	$47.00
Basic, Valley	56.00	56.00	56.00	54.50	43.00
Basic, del. Phila.	60.75	60.75	60.75	59.25	46.17
No. 2 Fdry, Pitts.	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	55.00	43.25
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	43.50
No. 2 Fdry, del. Phila.	61.25	61.25	61.25	59.75	46.67
No. 2 Fdry, Birm.	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	58.93	49.09
Malleable, Valley	56.50	56.50	56.50	55.00	43.50
Malleable, Chicago	56.50	56.50	56.50	55.00	43.50
Ferromanganese, Etna, Pa.	200.00†	200.00†	200.00†	228.00*	148.00

*78-82% Mn, per gross ton. †74-76% Mn, per net ton.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pitts.	$44.50	$44.50	$44.00	$42.75	
No. 1 Heavy Melt, E. Pa.	43.50	44.25	44.25	41.50	45.50
No. 1 Heavy Melt, Chicago	43.50	43.50	41.50	42.50	41.75
No. 1 Heavy Melt, Valley	45.50	45.50	45.50	44.00	42.75
No. 1 Heavy Melt, Cleve.	44.50	45.50	44.50	43.00	42.25
No. 1 Heavy Melt, Buffalo	43.75	43.75	44.75	43.00	46.25
Rails, Rerolling, Chicago	57.50	56.00	54.50	52.50	63.25
No. 1 Cast, Chicago	42.00	42.00	41.00	50.00	70.00

COKE, Net Ton					
Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$14.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	17.00	17.00
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	20.40

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99% plus, ingots 21.50, pigs 20.00, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 23.30; No. 43, 5% Si, 23.10; No. 142, 4% Cu, 24.40; No. 195, 4.5% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. Brand, 99.5% 34.50, Lone Star Brand, 35.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 25.50-26.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

DAILY NONFERROUS PRICE RECORD

	Price Aug. 13	Last Change	Previous Price	July Avg.	June Avg.	July, 1952 Avg.
Copper	28.50-30.00	Aug. 4	29.00-30.00	29.846	28.875	24.500
Lead	13.80	July 23	13.55	13.483	13.213	15.800
Zinc	11.00	Mar. 5	11.25	11.000	11.000	15.000
Tin	78.75	Aug. 12	78.50	81.577	92.918	121.500
Nickel	60.00	Jan. 14	56.50	60.000	60.000	56.500
Aluminum	21.50	July 24	20.50	20.923	20.500	19.000
Magnesium	27.00	Mar. 9	24.50	27.000	27.000	24.500

Quotations in cents per pound based on: Copper, del'd Conn. Valley; Lead, common grade, del'd. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del'd. New York; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Aluminum, primary ingots, 99% plus, del'd.; Magnesium, 99.8%, Freeport, Tex.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $2.00 per lb del'

Cobalt: 97-99%, $2.40 per lb for 550 lb ke $2.42 per lb for 100 lb case; $2.47 per lb u der 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 28.50-30.00 del'd. Con Valley, 28.625-30.125 del'd. Midwest; La 30.125 del'd; Fire refined 29.75 del'd.

Germanium: 99.9%, $350.00 per lb nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $165-$175 per troy oz.

Lead: Common 13.80, chemical 13.90, c roding 13.90, St. Louis. New York basis, a 0.20.

Lithium: 98%, $10.00-13.00 per lb, dependi on quantity.

Magnesium: 99.8% standard ingots 27.00, 1 000 lb or more, f.o.b. Freeport, Tex. Stic 1.3 in. dia., 45.00, 100 to 4999 lb.

Magnesium Alloys: AZ91B 30.50; AZ91C a alloys C, H, G and R 32.50; alloy M 34. 10,000 lb or more.

Mercury: Open market, spot, New York, $190-$191 per 76-lb flask.

Molybdenum: Powder, 99%, hydrogen reduced $2.50 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. or larger), unpacked, 60.00; 25-lb pigs 62.25; "A" nickel shot 63.65; "F" nickel shot or ingots, for addition to cast iron 60.00; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $140.00-$150.00 per troy oz, nom.

Palladium: $23-$24 per troy oz.

Platinum: $91-$93 per troy oz. from refineries.

Radium: $16.00-$21.50 per mg. radium content, depending on quantity.

Rhodium: $125 per troy oz.

Selenium: $80-85 per troy oz.

Silicon: 99.5%, $4.25-$4.75 per lb.

Silver: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $42.45 per lb; powder $37.50 per lb.

Thorium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, New York, 78.75.

Tungsten Powder: 98.8%, carbon reduced, 1000 lb lots $5.35 per lb del'd; less than 1000 lb $5.50; 99% plus, hydrogen reduced $7.70. Sintered ingots $10.43 per lb.

Zinc: Prime western 11.00, brass special 11.25, intermediate 11.50, E. St. Louis. Prime western 11.25-11.50, brass special 11.50-11.75, intermediate 11.75-12.00, high grade 12.35-12.85, special high grade 12.50-13.00, die casting alloy ingot 15.75, del'd.

Zirconium: Sponge $14.00 per lb; powder 100 lb or more $7.00; less than 100 lb $8.00.

(Note: Chromium, manganese and silicon metals are listed in ferralloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloy 22.50-23.00; No. 12 foundry alloy (No. 2 grade) 21.75-22.50; 5% silicon alloy, 0.60 Cu max., 24.00-24.75; 13 alloy, 0.60 Cu max., 24.00-24.75; 195 alloy 22.50-24.00; 108 alloy 22.50-23.00; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75-24.00; grade 2, 23.50-23.00; grade 3, 21.50-22.00; grade 4, 20.50-21.00.

Brass Ingot: Red brass, No. 115, 24.50; tin bronze, No. 225, 35.25, No. 245, 29.50; high-leaded tin bronze, No. 305, 28.75; No. 1 yellow, No. 405, 20.75, manganese bronze No. 421, 25.25.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 31.50; AZ91C, 32.00; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l., 37.03. Magnet wire deld., 15,000 lb or more 41.83; l.c.l., 42.58.

TITANIUM

Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forging billets, $6; hot-rolled and forged bars, $6.

LEAD

Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh). Sheets, full rolls, 140 sq ft or more $19 per cwt.; pipe, full coils $19 per cwt; traps and bends, list prices plus 30%.

ZINC

Sheets 23.00, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 6,000 lb and over. Plates, not over 12-in., 0.75-21.75; over 12-in. 20.75-21.75.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R. ..	86.5	67.5	92.5
Strip, C.R. ...	92.5	70.5	98.5
Plate, H.R. ..	84.5	66.5	90.5
Rod, Shapes ..	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks...	....	60.0	....

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	33.9	...	...
0.135-0.096	12-48	34.4	...	...
0.095-0.077	12-48	35.1	32.7	37.5
0.076-0.061	12-48	35.7	32.9	37.7
0.060-0.048	12-48	36.1	33.2	38.1
0.047-0.038	12-48	36.6	33.6	38.4
0.037-0.030	12-48	37.0	34.0	39.1
0.029-0.024	12-48	37.6	34.3	39.6
0.023-0.019	12-36	38.3	35.1	40.4
0.018-0.017	12-36	39.1	35.7	41.3
0.016-0.015	12-36	40.0	36.5	42.5
0.014	12-24	41.0	37.5	43.8
0.013-0.012	12-24	42.1	38.2	44.8
0.011	12-24	43.1	39.4	46.4
0.010-0.0095	12-24	44.3	40.5	48.0
0.009-0.0085	12-24	45.6	41.9	50.0
0.008-0.0075	12-24	47.1	43.1	51.8
0.007	12-18	48.6	44.6	54.1
0.006	12-18	50.2	46.0	59.1

* Lengths 72 to 180 inches, † Maximum diameter, 26 inches.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— 11S-T3	17S-T4	—Hexagonal— 11S-T3	17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.0	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Plates and Circles: Thickness 0.250-3.000 in., widths or diameters 24-60 in., lengths 72-240 in.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	32.4	36.3
50S-F	33.5	37.4
4S-F	34.5	39.1
52S-F	36.2	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6*	47.1	53.7

* Widths or diameters 24-48 in., lengths 72-180 in.

ALUMINUM

Industrial Roofing Sheet (0.032-in. thick): Flat, 42.75 in. wide, lengths 60-144 in., $2.838 to $6.816 per sheet. Corrugated, 35 in. wide, lengths 60-144 in., $2.862 to $6.874 per sheet.

Forging Stock: Round, Class 1, 42.05-32.76, in specific lengths 36-144 in., diameters 0.375-8.000 in.; rectangles and squares, Class 1, 49.2 to 37.6 in random lengths 0.375-4.000 in. thick, widths 0.750-10.00 in.

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 108.00, 0.064-in. 81.00, 0.125-in. 71.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled, AZ31, 53.00, 20,000 lb or more 0.188-1.000 in. thick, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 69.00, 20,000 lb or more, ¼-in. thick, widths 24-48 in., lengths 60-144 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

BRASS MILL PRICES

(Effective Apr. 1, 1953)

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	50.48b	48.08c	....	50.42	28.625	28.625	27.875
Yellow Brass	42.87	38.68d	43.16	45.78	21.375	21.125	19.625
Red Brass, 85%	47.11	46.80	47.40	49.92	25.125	24.875	24.375
Low Brass, 80%	45.99	45.68	46.28	48.80	24.125	23.875	23.375
Naval Brass	47.01	41.07	53.52	50.17	20.000	19.750	19.250
Commercial Bronze, 90%...	48.76	48.45	49.05	51.32	26.125	25.875	25.375
Nickel Silver, 10%	56.56	58.59	58.59	....	25.250	25.000	12.625
Phosphor Bronze, A, 5%....	70.50	70.75	70.75	72.25	30.625	30.375	29.375
Silicon Bronze	54.70	53.64	54.49	72.10e	27.625	27.375	26.625
Manganese Bronze	50.73	44.62	54.74	....	20.000	19.750	19.250
Muntz Metal	44.91	40.47	....	....	20.000	19.750	19.250

a. Cents per lb, f.o.b. mill. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and Brass: Heavy copper and wire, No. 1 20.50; No. 2 copper 18.50; light copper 16.50; No. 1 composition red brass 15.00; No. 1 composition turnings 14.50; mixed brass turnings 9.00; new brass clippings 18.50 nom.; No. 1 brass rod turnings 13.00 nom.; light brass 9.00; heavy yellow brass 11.00; new brass rod ends 17.50 nom.; auto radiators, unsweated 11.00; cocks and faucets 13.00; brass pipe 14.50.

Lead: Heavy 11.00-11.50; battery plate 6.25-6.50; linotype and stereotype 13.25; electrotype 11.50; mixed babbitt 12.00-12.50.

Zinc: Old zinc, 4.50; new die cast scrap, 4.50; old die cast scrap, 3.50.

Tin: No. 1 pewter 37.00-45.00; block tin pipe 60.00-65.00; No. 1 babbitt 35.00-40.00.

Aluminum: 2S clippings 13.00; low copper clippings 10.00, mixed clippings 10.00; old sheet 9.00; borings and turnings 6.50; pistons and struts 6.50; crankcases 9.00; industrial castings 9.00.

Magnesium: Clippings 20.00-21.00; clean castings 19.00-20.00; iron castings, not over 10% removable Fe, 18.00-19.00.

Nickel: Sheets and clips $1.00; rolled anodes $1.00; turnings 85.00c; rod ends $1.00.

Monel: Clippings 33.00; old sheet 30.00; turnings 25.00; rods 33.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Copper, Brass: No. 1 copper 21.50; No. 2 copper 20.00; light copper 18.50; refinery brass (60% copper) per dry copper content 18.00; auto radiators nom.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Aluminum: 2S, 3S clippings 15.00-15.50; 51S, 52S clippings 15.00-15.50; 14S, 17S, 24S clippings 14.00-14.50; mixed clippings 14.00-14.50; old sheet 12.50-13.50; old cast 12.50-13.50; clean old cable, free of steel 14.50-16.00; borings and turnings 13.00-13.75.

INGOT MAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 21.50; No. 2 copper 20.00; light copper 18.50; No. 1 composition borings 16.00-16.50; No. 1 composition solids 16.50-17.00; heavy yellow brass solids 12.50-12.75; yellow brass turnings 11.50-12.00; radiators 12.50.

PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $2.15 per lb.

Copper: Flat-rolled 47.14, oval 46.64, base prices; electrodeposited 38.38, carload lots; cast 44.14, ton lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb 97.50; 200-499 lb 96.00; 500-999 lb 95.50; 1000 lb or more 95.00.

Zinc: Bar 20.00, bar or flat top 19.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 2000 lb 29.00; over 2000 lb 28.75.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulfate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulfate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,900 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.500; 2500 oz and over 77.375.

Sodium Cyanide: Egg, under 1000 lb 19.80, 1000-19,900 lb 18.80, 20,000 lb and over 17.80; granular, add 1.0 premium to above.

Sodium Stannate: Less than 100 lb 64.40; 100-600 lb 50.50; 700-1900 lb 48.00; 2000-9900 lb 46.20; 10,000 lb or more 45.10.

Stannous Chloride (Anhydrous): Less than 50 lb 148.40, 50 lb 114.40; 100-300 lb 99.40; 400-900 lb 97.00; 1000-1900 lb 94.60; 2000-4900 lb 90.90; 5000-19,000 lb 84.80; 20,000 lb and over 78.70.

Stannous Sulfate: Less than 50 lb 118.80; 50 lb 88.80; 100-1900 lb 86.80; 2000 lb and over 84.80.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Nonferrous Metals

Buyers relax, but it's only because price declines and improved supplies of nonferrous metals contribute to a wait-and-see attitude

PURCHASING PACE in many nonferrous metals is at a walk.

It's not because there's no need for the metal. Industry's buyers are already planning for the fall production push, and their requirements will be substantial.

Fabian Policy — Consumers just want to find out what the market is going to do, and the winds have certainly been variable in such metals as copper, lead, zinc and tin. Until some of the dust settles, buyers keep at a respectable distance and husband their monetary resources.

Psychology of supply contributes to the wait-and-see attitude. When people find they don't have to scurry for supplies they relax, temporarily loosening the market even more. Too, pipelines to consumers are relatively well-filled and with competition sharpening, all costs are now under scrutiny.

Copper Change—Copper is under the screws now and a general price decline is almost certain. The market is nervous under such depressants as the huge stocks held by the British government and the near-70,000 tons stacked up in Chile, which U. S. stockpilers are considering buying.

Domestic sellers, who held firm price lines through the original London trading nose dive, were overjoyed at the rebound there the following week. While London prices have picked up, volume is light, amounting to only about 10,000 tons sold to date. At home, orders are held back until the last minute in case the price slips; all August needs haven't yet been taken care of by some users.

Lead Balloons—While almost all lead sales are on an average price basis—expressing consumers' belief the market won't go higher—September and October promise to be big months for sellers. Battery makers must fill up for their busy season, and other tonnage users have low stocks.

European demand is quite good. Buying there is so strong it's creating a temporary shortage in metal for immediate delivery and bumping the import price up close to that of U. S. producers.

Zinc's Woes — Multiprice system prevailing for zinc is unfortunate; last year's fluctuations left a bad impression with users and current events don't help. American Zinc Institute statistics show slab zinc stocks of 103,906 tons going into August broke through the 100,000-mark at the end of July for the first time since September, 1947. Production, shipments and backlog dipped slightly.

Here's one company's picture of the situation: American Zinc, Lead & Smelting Co. in the first six months of 1953 showed a 41 per cent drop in net income, despite a 23 per cent increase in tonnage of zinc products shipped and full operations at all divisions except leaded zinc oxide. Howard I. Young, American Zinc's president, says the present price level doesn't permit a reasonable mark of profit for a substantial percentage of domestic zinc production.

New Records for Aluminum

The high-flying aluminum industry racked up more records in the first half of '53, and they will undoubtedly be eclipsed again in the second half. "More primary aluminum was turned out in the first half of 1953 than during the entire years of 1945, 1946 or 1947," says Donald M. White, secretary, the Aluminum Association. June output of 104,152 tons put second quarter production 9 per cent over the first quarter and the first half 30 per cent above the same period last year.

Shipments of aluminum sheet and plate by members also hit new highs, with both the second quarter and first half, 1953, shipments topping last year's periods by 44 per cent at 357,783 tons. Both foil and castings shipments by member companies were 52 per cent over last year's first half at 27,851 tons and 10,542 tons, respectively.

Scrap Dealers Provoked

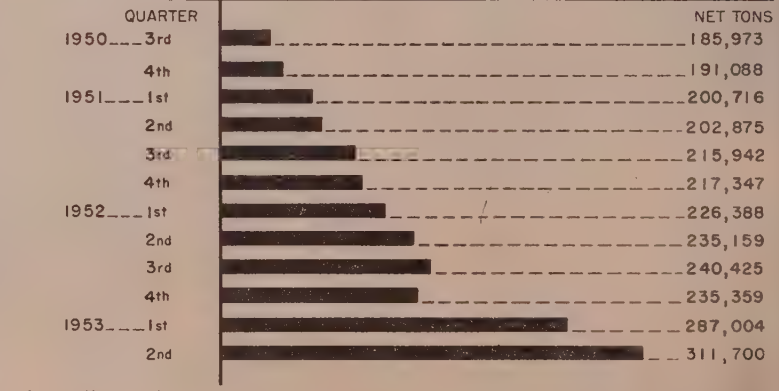
Scrap dealers are up in arms over the Defense department's go-ahead on building aluminum sweating furnaces in Oklahoma City and Sacramento, Calif. The military will continue operations of present furnaces also, even though they compete directly with private operations. Secretary of Defense Charles E. Wilson supported the practice, saying scrap melted into ingots brings a higher net return than sales of loose metal. Another justification lies in the legal requirement that the services demilitarize fighting equipment; this can be done most economically by sweating, say defense officials. Work on the two new furnaces was suspended about two months ago when dealers told the Senate Small Business Committee that the government would lose money operating them.

Nonferrous Briefs

•Brass and bronze ingot makers are again cutting prices 1 to 1.5 cents a pound, which usually precedes a general price decline. One of their big markets that's well stocked and not buying is brass plumbing goods and fixtures.

•Hydraulic stretcher that can handle aluminum alloy plate up to 2 inches thick and 40 feet long has gone into operation at Kaiser Aluminum's Trentwood, Wash., plant. Capacity is 5 million pounds yearly.

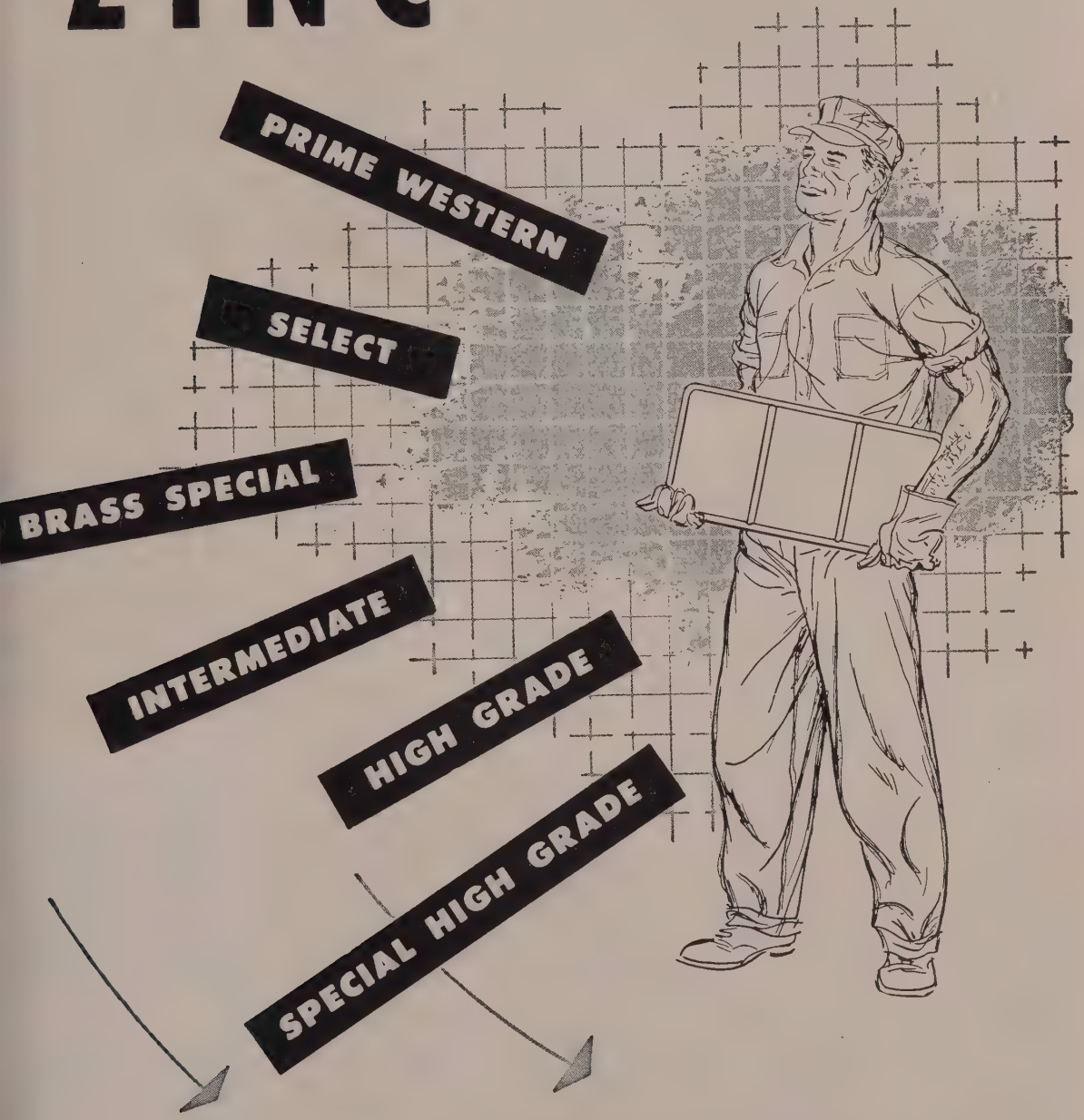
NEW RECORDS FOR PRIMARY ALUMINUM OUTPUT



Source: Aluminum Association

SLAB ZINC

every grade of ZINC
for urgent military and
civilian requirements



AMERICAN ZINC SALES COMPANY

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in *italics*.
Code numbers following mill points indicate producing company, key on page 185. Key to footnotes, page 187.

—SEMIFINISHED—

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$86.00
Munhall,Pa. U5 .....59.00

INGOTS Alloy (NT)
Detroit R7 .....$63.00
Fontana,Calif. K1 ....88.00
Midland,Pa. C18 .....62.00
Munhall,Pa. U5 .....62.00

BILLETS, BLOOMS & SLABS
Carbon Rerolling (NT)
Aliquippa,Pa. J5 ....$62.50
Bessemer,Pa. U5 .....62.00
Clairton,Pa. U5 .....62.00
Ensley,Ala. T2 .....62.00
Fairfield,Ala. T2 .....62.00
Fontana,Calif. K1 ....81.00
Gary,Ind. U5 .....62.00
Johnstown,Pa. B2 .....62.00
Lackawanna,N.Y. B2 ..62.00
Munhall,Pa. U5 .....62.00
So.Chicago,Ill. U5 ....62.00
So.Duquesne,Pa. U5 ..62.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 ....$75.50
Bessemer,Pa. U5 ....75.50
Buffalo R2 .....75.50
Canton,O. R2 .....75.50
Clairton,Pa. U5 .....75.50
Cleveland R2 .....75.50
Conshohocken,Pa. A3 ..82.50
Detroit R7 .....78.50
Ensley,Ala. T2 .....75.50
Fairfield,Ala. T2 .....75.50
Fontana,Calif. K1 ....94.50
Gary,Ind. U5 .....75.50
Geneva,Utah C11 ....75.50
Houston S5 .....85.50
Johnstown,Pa. B2 ....75.50
Lackawanna,N.Y. B2 ..75.50
LosAngeles B3 .....94.50
Munhall,Pa. U5 .....75.50
Seattle B3 .....94.50
So.Chicago R2,U5,W14.75.50
So.Duquesne,Pa. U5 ..75.50
So.SanFrancisco B3 ...94.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$82.00
Buffalo R2 .....82.00
Canton,O. R2 .....82.00
Canton,O. T7 .....84.60
Conshohocken,Pa. A3 ..89.00
Detroit R7 .....85.00
Fontana,Calif. K1 ....101.00
Gary,Ind. U5 .....82.00
Houston S5 .....92.00
Ind.Harbor,Ind. Y1 ..82.00
Johnstown,Pa. B2 ....82.00
Lackawanna,N.Y. B2 ..82.00
LosAngeles B3 .....102.00
Massillon,O. R2 .....82.00
Midland,Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
So.Chicago R2,U5,W14.82.00
So.Duquesne,Pa. U5 ...82.00
Struthers,O. Y1 .....82.00
Warren,O. C17 .....82.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$92.50
Canton,O. R2 .....92.50
Cleveland R2 .....92.50
Fontana,Calif. K1 ...113.50
Gary,Ind. U5 .....92.50
Massillon,O. R2 .....92.50
So.Chicago,Ill. R2 ....92.50
So.Duquesne,Pa. U5 ..92.50

SHEET BAR (NT)
Fontana,Calif. K1 ....$93.18

SKELP
Aliquippa,Pa. J5 .....3.85
Munhall,Pa. U5 .....3.75
Warren,O. R2 .....3.75
Youngstown R2, U5 ...3.75

WIRE RODS
Aliquippa,Pa. J5 ....4.525
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2...4.525
Buffalo W12 .....4.525
Cleveland A7 .....4.525
Donora,Pa. A7 .....4.525
Fairfield,Ala. T2 ....4.525
Fontana,Calif. K1 ....5.325
Johnstown,Pa. B2 ....4.525
Houston S5 .....4.925
Minnequa,Colo. C10 ..4.775
Monessen,Pa. P7 .....4.725
Joliet,Ill. A7 .....4.525
KansasCity,Mo. S5 ....4.865
LosAngeles B3 .....5.325
No.Tonawanda,N.Y.B11 4.525
Pittsburg,Calif. C11 ..5.175
Portsmouth,O. P12 ....4.726
Roebling,N.J. R5 .....4.625
So.Chicago,Ill. R2 ....4.525
SparrowsPoint,Md. B2.4.625
Sterling,Ill.(1) N15 ..4.525
Struthers,O. Y1 .....4.525
Torrance,Calif. C11 ...5.325
Worcester,Mass. A7 ...4.825

—STRUCTURALS—

Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 .....4.10
Bethlehem,Pa. B2 .....4.15
Bessemer,Ala. T2 .....4.10
Clairton,Pa. U5 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 ....4.75
Gary,Ind. U5 .....4.10
Geneva,Utah C11 .....4.10
Houston S5 .....4.60
Ind.Harbor,Ind. I-2 ...4.10
Johnstown,Pa. B2 .....4.15
KansasCity,Mo. S5 ....4.80
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 .....4.80
Minnequa,Colo. C10 ....4.55
Munhall,Pa. U5 .....4.10
Niles,Calif.(22) P1 ....4.91
Phoenixville,Pa. P4 ...4.95
Seattle B3 .....4.85
So.Chicago,Ill. U5, W14.4.10
So.SanFrancisco B3 ...4.75
Torrance,Calif. C11 ...4.80
Weirton,W.Va. W6 ....4.35

Wide Flange
Bethlehem,Pa. B2 .....4.15
Clairton,Pa. U5 .....4.10
Fontana,Calif. K1 .....5.30
Lackawanna,N.Y. B2 ..4.15
Munhall,Pa. U5 .....4.10
So.Chicago,Ill. U5 ....4.10

Alloy Stand. Shapes
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 ....6.40
Gary,Ind. U5 .....5.00
Munhall,Pa. U5 .....5.00
So.Chicago,Ill. U5 .....5.00

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....6.175
Bessemer,Ala. T2 .....6.175
Bethlehem,Pa. B2 .....6.20
Clairton,Pa. U5 .....6.175
Fairfield,Ala. T2 .....6.175
Fontana,Calif K1 ....6.825
Gary,Ind. U5 .....6.175
Geneva,Utah C11 .....6.175
Ind.Harbor,Ind. I-2 ..6.175
Ind.Harbor,Ind. Y1 ...6.675
Johnstown,Pa. B2 .....6.20
Lackawanna,N.Y. B2 ...6.20
LosAngeles B3 .....6.85
Munhall,Pa. U5 .....6.175
Seattle B3 .....6.90
So.Chicago,Ill. U5, W14 6.175
So.SanFrancisco B3 ....6.80
Struthers,O. Y1 .....6.675

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....6.20
Lackawanna,N.Y. B2 ..6.20
Munhall,Pa. U5 .....6.125
So.Chicago,Ill. U5 ....6.125

BEARING PILES
Munhall,Pa. U5 .....4.10
So.Chicago,Ill. U5 .....4.10

—PILING—

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ...4.925
Lackawanna,N.Y. B2 ..4.925
Munhall,Pa. U5 .....4.925
So.Chicago,Ill. U5 ....4.925

—PLATES—

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 .....4.10
Ashland,Ky. (15) A10 ..4.10
Bessemer,Ala. T2 .....4.10
Clairton,Pa. U5 .....4.10
Claymont,Del. C22 ....4.55
Cleveland J5, R2 .....4.10
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ..4.55
Ecorse,Mich. G5 .....4.65
Fairfield,Ala. T2 .....4.10
Fontana,Calif.(30) K1 ..4.75
Gary,Ind. U5 .....4.10
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 .....4.10
Harrisburg,Pa. C5 ....6.50
Houston S5 .....4.60
Ind.Harbor,Ind. I-2, Y1.4.10
Johnstown,Pa. B2 .....4.10
Lackawanna,N.Y. B2 ..4.10
Minnequa,Colo. C10 ....4.95
Munhall,Pa. U5 .....4.10
Pittsburgh J5 .....4.10
Riverdale,Ill. A1 .....4.10
Seattle B3 .....5.00
Sharon,Pa. S3 .....4.10
So.Chicago,Ill. U5, W14 4.10
SparrowsPoint,Md. B2 ..4.10
Steubenville,O. W10 ...4.10
Warren,O. R2 .....4.10
Weirton,W.Va. W6 ....4.40
Youngstown R2, U5, Y1.4.10

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.90
Geneva,Utah C11 .....5.25

PLATES, Wrought Iron
Economy,Pa. B14 .....9.30

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.25
Bessemer,Ala. T2 .....6.25
Clairton,Pa. U5 .....6.25
Cleveland J5 .....6.25
Conshohocken,Pa. A3 ..6.50
Ecorse,Mich. G5 .....7.10
Fairfield,Ala. T2 .....6.25
Fontana,Calif.(30) K1 .6.95
Gary,Ind. U5 .....6.25
Geneva,Utah C11 .....6.25
Ind.Harbor,Ind. I-2 ...6.25
Ind.Harbor,Ind. Y1 ....6.75
Johnstown,Pa. B2 .....6.25
Lackawanna,N.Y. B2 ..6.25
Munhall,Pa. U5 .....6.25
Pittsburgh J5 .....6.25
Seattle B3 .....7.15
Sharon,Pa. S3 .....6.25
So.Chicago,Ill. U5, W14.6.25
SparrowsPoint,Md. B2 ..6.25
Youngstown U5 .....6.25
Youngstown Y1 .....6.75

PLATES, Alloy
Claymont,Del. C22 ....5.65
Coatesville,Pa. L7 ....5.75
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.55
Johnstown,Pa. B2 .....5.55
Munhall,Pa. U5 .....5.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5, W14 5.55
SparrowsPoint,Md. B2 5.55

FLOOR PLATES
Cleveland J5 .....5.15
Conshohoken,Pa. A3 ..5.15
Ind.Harbor,Ind. I-2 ....5.15
Munhall,Pa. U5 .....5.15
So.Chicago,Ill. U5 .....5.15

PLATES, Ingot Iron
Ashland,c.l (15) A10 ..4.35
Ashland,l.c.l. (15) A10..4.85
Cleveland, c.l. R2 .....4.70
Warren,O. c.l. R2 ....4.70

—BARS—

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..4.15
Aliquippa,Pa. J5 .....4.15
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.40
Bessemer,Ala. T2 .....4.15
Buffalo R2 .....4.15
Clairton,Pa. U5 .....4.15
Canton,O. R2 .....4.15
Cleveland R2 .....4.15
Detroit R7 .....4.30
Ecorse,Mich. G5 .....4.50
Emeryville,Calif. J7 ...4.90
Fairfield,Ala. T2 .....4.15
Fontana,Calif. K1 ....4.85
Gary,Ind. U5 .....4.15
Houston S5 .....4.65
Ind.Harbor,Ind, I-2, Y1.4.15
Johnstown,Pa. B2 ....4.15
KansasCity,Mo. S5 ....4.85
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 .....4.85
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.60
Niles,Calif. P1 .....4.85
N.Tonawanda,N.Y.B11 .4.15
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 .....4.15
Portland,Oreg. O4 ....4.90
Seattle B3, N14 .....4.90
So.Chicago R2, U5, W14 4.15
So.Duquesne,Pa. U5 ....4.15
So.SanFran.,Calif. B3...4.90
Sterling,Ill.(1) N15 .....4.15
Struthers,O. Y1 .....4.15
Torrance,Calif. C11 ....4.85
Weirton,W.Va. W6 ....4.30
Youngstown R2, U5 ....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.875
Buffalo R2 .....4.875
Canton,O. T7 .....5.02
Canton,O. R2 .....4.875
Clairton,Pa. U5 .....4.875
Detroit R7 .....5.025
Ecorse,Mich. G5 .....5.225
Fontana,Calif. K1 ....5.925
Gary,Ind. U5 .....4.875
Houston S5 .....5.375
Ind.Harbor,Ind, I-2, Y1 4.875
Johnstown,Pa. B2 ....4.875
KansasCity,Mo. S5 ....5.575
Lackawanna,N.Y. B2..4.875
LosAngeles B3 .....5.925
Massillon,O. R2 .....4.875
Midland,Pa. C18 .....4.875
So.Chicago R2, U5,W14 4.875
So.Duquesne,Pa. U5 ...4.875
Struthers,O. Y1 .....4.875
Warren,O. C17 .....4.875
Youngstown U5 .....4.875

BARS & SMALL SHAPES, H.R.
High-Strength Low-Alloy
Aliquippa,Pa. J5 ....6.225
Bessemer,Ala. T2 ....6.225
Bethlehem,Pa. B2 ....6.225
Clairton,Pa. U5 .....6.225
Ecorse,Mich. G5 .....6.875
Fairfield,Ala. T2 .....6.225
Fontana,Calif. K1 ....7.475
Gary,Ind. U5 .....6.225
Ind.Harb.,Ind. I-2 ....6.225
Ind.Harb.,Ind. Y1 ....6.725
Johnstown,Pa. B2 ....6.225
Lackawanna,N.Y. B2 ..6.225
LosAngeles B3 .....6.925
Pittsburgh J5 .....6.225
Seattle B3 .....6.975
So.Chicago W14 .....6.225
So.Duquesne,Pa. U5 ...6.225
So.SanFrancisco B3 ..6.975
Struthers,O. Y1 .....6.725
Youngstown U5 .....6.225

BAR SIZE ANGLES;H.R.CARBON
Bethlehem,Pa. B2 ....4.35

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....4.15
Atlanta A11 .....4.40
Niles,Calif. P1 .....4.85
SanFrancisco S7 .....5.10

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 ....6.00
Gary,Ind. U5 .....5.00
Houston S5 .....5.70
KansasCity S5 .....5.90
Youngstown U5 .....5.00

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....5.20
BeaverFalls,Pa. M12, R2 5.20
Buffalo B5 .....5.25
Camden,N.J. P13 .....5.65
Carenegie,Pa. C12 ....5.20
Chicago W18 .....5.20
Cleveland A7, C20 ....5.20
Detroit P17, R7 .....5.35
Detroit B5 .....5.40
Donora,Pa. A7 .....5.20
Elyria,O. W8 .....5.20
FranklinPark,Ill. N5 ..5.20
Gary,Ind. R2 .....5.20
GreenBay,Wis. F7 ...5.185
Hammond,Ind. L2, M13 5.20
Hartford,Conn. R2 ....5.75
Harvey,Ill. B5 .....5.20
LosAngeles R2 .....6.65
Mansfield,Mass. B5 ....5.75
Massillon,O. R2, R8....5.20
Monaca,Pa. S17 .....5.20
Newark,N.J. W18 .....5.65
NewCastle,Pa. (17) B4. 5.20
Pittsburgh J5 .....5.20
Plymouth,Mich. P5 ....5.45
Putnam,Conn. W18. ....5.75
Readville,Mass. C14 ....5.75
St.Louis,Mo. M5 .....5.50
So.Chicago,Ill. W14 ....5.20
SpringCity,Pa. K3 ....5.65
Struthers,O. Y1 .....5.20
Waukegan,Ill. A7 .....5.20
Worcester,Mass. W19 ..6.10
Youngstown F3, Y1 ....5.20

BARS, Cold-Finished Carbon
(Turned and Ground)
Cumberland,Md.(5) C19.4.45

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....6.325
Beaver,Falls,Pa. M12 ..6.325
Bethlehem,Pa. B2 ....6.325
Buffalo B5 .....6.325
Camden,N.J. P13 .....6.50
Canton,O. R2 .....6.325
Canton,O. T7 .....6.29
Carnegie,Pa. C12 .....6.00
Chicago W18 .....6.32
Cleveland A7, C20 ....6.32
Detroit P17, R7 .....6.47
Detroit B5 .....6.52
Donora,Pa. A7 .....6.32
Elyria,O. W8 .....6.32
Gary,Ind. R2 .....6.32
Hammond,Ind. L2, M13 6.32
Hartford,Conn. R2 ....6.77
Harvey,Ill. B5 .....6.32
Lackawanna,N.Y. B2 ..6.32
Mansfield,Mass. B5 ...6.77
Massillon,O. R2, R8 ..6.32
Midland,Pa. C18 .....6.32
Monaca,Pa. S17 .....6.32
Newark,N.J. W18 .....6.6
Plymouth,Mich. P5 ....6.52
So.Chicago,Ill. R2, W14 6.32
SpringCity,Pa. K3 ....6.47
Struthers,O. Y1 .....6.32
Warren,O. C17 .....6.32
Waukegan,Ill. A7 .....6.32
Worcester,Mass. A7 ...6.62
Youngstown F3, Y1 ....6.32

BARS, Reinforcing (Fabricator
AlabamaCity,Ala. R2 ..4.1
Atlanta A11 .....4.4
Buffalo R2 .....4.1
Cleveland R2 .....4.1
Emeryville,Calif. J7 ...4.9
Fairfield,Ala. T2 .....4.1
Fontana,Calif. K1 ....4.8
Gary,Ind. U5 .....4.1
Houston S5 .....4.6
Ind.Harbor,Ind. I-2, Y1.4.1
Johnstown,Pa. B2 .....4.1
KansasCity,Mo. S5 ....4.8
Lackawanna,N.Y. B2 ..4.1
LosAngeles B3 .....4.8
Milton,Pa. B6 .....4.6
Minnequa,Colo. C10 ....4.7
Niles,Calif. P1 .....4.8
Pittsburg,Calif. C11 ....4.8
Pittsburgh J5 .....4.1
SandSprings,Okla. S5 ..5.0
Seattle B3, N14 .....4.9
So.Chicago,Ill. R2 .....4.1
So.Duquesne,Pa. U5 ....4.1
So.SanFrancisco B3 ....4.9
SparrowsPoint,Md B2 ..4.1
Sterling,Ill. (1) N15 .....4.1
Struthers,O. Y1 .....4.1
Torrance,Calif. C11 ....4.8
Youngstown R2, U5 ....4.1

BARS, Reinforcing
(Fabricated; to consumers)
Johnstown, ¼-1" B2 ..5.5
KansasCity S5 .....6.3
LosAngeles B3 .....6.1
Marion,O. P11 .....5.2
Seattle N14 .....5.8
Seattle B3 .....6.2
So.SanFrancisco B3 ....6.2
SparrowsPt. ¼-1" B2..5.5
Williamsport,Pa. S19 ..5.4

RAIL STEEL BARS
Avis,Pa.(4) J8 .....4.7
ChicagoHts.(3) C2 ....4.5
ChicagoHts.(4) C2 ....4.7
ChicagoHts.(3,4) I-2 ...4.5
Franklin,Pa.(3) F5 ....4.5
Franklin,Pa.(4) F5 ....4.7
FortWorth,Tex.(26) T4..4.8
Marion,O.(3) P11 .....4.8
Moline,Ill.(3) R2 .....4.7
Tonawanda(3,4) B12 ..5.5
Williamsport(3) S19 ..5.5
Williamsport,Pa.(4) S19.5.5

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 10.3
Economy,Pa.(D.R.)B14 12.3
Economy(Staybolt) B14 13.3
Mck.Rks.(Staybolt) L5 15.
Mck.Rks.(S.R.) L5 ...10.
Mck.Rks.(D.R.) L5 ...14.

—SHEETS—

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 .3.9
Ashland,Ky.(8) A10 ..3.9
Butler,Pa. A10 .....3.9
Cleveland J5, R2 .....3.9
Conshohocken,Pa. A3 ..4.3
Detroit M1 .....4.
Ecorse,Mich. G5 .....4.
Fairfield,Ala. T2 .....3.9
Fairless,Pa. U5 .....4.
Fontana,Calif. K1 .....4.
Gary,Ind. U5 .....3.9
Geneva,Utah C11 .....4.
GraniteCity,Ill. G4 ....4.
Ind.Harbor,Ind. I-2, Y1 3.9
Irvin,Pa. U5 .....3.9
Lackawanna,N.Y. B2..3.9
Munhall,Pa. U5 .....3.9

s,O. N12 .....5.425
sburg,Calif. C11 ..4.625
burgh J5 .....3.925
rdale,Ill. A1 .....3.925
ron, Pa. S3 .....4.225
hicago,Ill. W14 ...3.925
rowsPoint,Md. B2..3.925
nbenville,O. W10 ..3.925
rance, Calif. C11 ..4.625
rren,O. R2 .....3.925
rton,W.Va. W6 ...3.925
ngstown U5, Y1 ...3.925

ETS, H.R. (19 gage)
bamaCity,Ala. R2 ..5.225
ver,O. R1 .....5.825
nsfield,O. E6 .....5.80
es,O. N12 .....5.20
rance,Calif. C11 ...5.875

ETS, H.R. (14 ga. heavier)
ligh-Strength Low-Alloy
veland J5, R2 .....5.90
shohocken,Pa. A3 ..6.15
rse,Mich. G5 .....6.375
rfield,Ala. T2 .....5.90
ntana,Calif K1 .....7.00
ry,Ind. U5 .....5.90
.Harbor,Ind. I-2 ....5.90
.Harbor,Ind. Y1 ....6.40
in,Pa. U5 .....5.90
ckawanna(35) B2 ...5.90
nhall,Pa. U5 .....5.90
tsburgh J5 .....5.90
aron,Pa. S3 .....5.90
Chicago,Ill. U5 ....5.90
arrowsPoint(38) B2 .5.90
rren,O. R2 .....5.90
eirton,W.Va. W6 ....6.175
ungstown U5 .....5.90
ungstown Y1 .....6.40

EETS, Hot-Rolled Ingot Iron
18 Gage and Heavier
hland,Ky.(8) A10 ..4.175
eveland R2 .....4.525
.Harbor,Ind. I-2 ..4.175
arren,O. R2 .....4.525

EETS, Cold-Rolled Steel
(Commercial Quality)
tler,Pa. A10 .....4.775
eveland J5, R2 .....4.775
orse,Mich. G5 .....4.975
irfield,Ala. T2 .....4.775
irless,Pa. U5 .....4.875
llansbee,W.Va. F4 ..5.775
ntana,Calif. K1 ....5.875
ry,Ind. U5 .....4.775
aniteCity,Ill. G4 ....5.275
.Harbor,Ind. I-2, Y1 4.775
vin,Pa. U5 .....4.775
ckawanna,N.Y. B2 ..4.775
ddletown,O. A10 ....4.775
ttsburg,Calif. C11 ..5.725
ttsburgh J5 .....4.775
arrowsPoint,Md. B2..4.775
eubenville,O. W10 ...4.775
arren,O. R2 .....4.775
eirton,W.Va. W6 ....4.775
ungstown Y1 .....4.775

EETS, Cold-Rolled
High-Strength Low-Alloy
veland J5, R2 .....7.225
orse,Mich. G5 .....7.675
ntana,Calif. K1 .....8.275
ry,Ind. U5 .....7.225
dianaHarbor,Ind. Y1 .7.725
vin,Pa. U5 .....7.225
ckawanna(37) B2 ...7.225
tsburgh J5 .....7.225
arrowsPoint (38) B2.7.225
arren,O. R2 .....7.225
eirton,W.Va. W6 ....7.475
ungstown Y1 .....7.725

EETS, Cold-Rolled Ingot Iron
tler,Pa. A10 .....5.275
eveland R2 .....5.375
ddletown,O. A10 ....5.275
arren,O. R2 .....5.375

EETS, Gal'd No. 10 Steel
abamaCity,Ala. R2 ..5.275
hland,Ky (8) A10 ..5.275
nton,O. R2 .....5.275
ver,O. R1 .....5.475
irfield,Ala. T2 ....5.275†
ry,Ind. U5 .....5.275†
aniteCity,Ill. G4 ....5.475
.Harbor,Ind. I-2 ...5.325
vin,Pa. U5 .....5.275†
komo,Ind. C16 .....5.375
artinsFerry,O. W10 ..5.275
les,O. N12 .....5.80
ttsburg,Calif. C11 ..6.025
aron,Pa. S3 .....5.45
arrowsPoint,Md. B2 5.275
eubenville,O. W10 ..5.275
rrance,Calif. C11 ..6.025
eirton,W.Va. W6 ....5.275

Based on 5e zinc.

SHEETS, Galvanized No. 10, High-Strength Low-Alloy
Irvin,Pa. U5 .....7.925
SparrowsPoint(39) B2 .8.075

SHEETS, Galvanized Ingot Iron No. 10 flat
Ashland,Ky.(8) A10 ..5.525
Canton,O. R2 .....6.025

SHEETS, Culvert	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.325	....
Canton,O. R2	...6.475	6.925
Fairfield T2	....6.075	6.325
Gary,Ind. U5	..6.075	6.325
Ind Harbor I-2	.6.075	6.325
Irvin,Pa. U5	...6.075	6.325
Kokomo,Ind. C16	6.525	....
MartinsFry.,O	W106.075	....
Pitts.Cal. C11	..6.325	....
SparrowsPt. B2	.6.075	....
Torrance,Calif.C11	6.825	....

SHEETS, Culvert	Pure Iron
Ashland,Ky. A10	.....6.575
Fairfield,Ala. T2	.....6.325
MartinsFerry,O. W10	..6.325

SHEETS, Galvannealed Steel
Canton,O. R2 .....5.825
Irvin,Pa. U5 .....5.825†
Kokomo,Ind.(13) C16 ..5.925
Niles,O. N12 .....6.35

†Based on 5c zinc.

SHEETS ZINCGRIP STEEL
Butler,Pa. A10 .....5.525
Middletown,O. A10 ....5.525

SHEETS, ZINCGRIP Ingot Iron
Butler,Pa. A10 .....5.775
Middletown,O. A10 ....5.775

SHEETS, Electro Galvanized
Cleveland R2 (28) 6.125
Niles,O. R2 (28) 6.125
Weirton,W.Va. W6 ....5.975

SHEETS, ALUMINIZED
Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron
Ashland,Ky.(8) A10 ...5.175
Cleveland R2 .....5.175
Gary,Ind. U5 .....5.175
GraniteCity,Ill. G4 ...5.875
Ind.Harbor,Ind. I-2 ..5.175
Irvin,Pa. U5 .....5.175
Middletown,O. A10 ....5.175
Youngstown Y1 .....5.175

BLUED STOCK, 29 ga.
Yorkville,O. W10 .....7.20
Follansbee,W.Va. F4 ...7.30
Follansbee (23) F4 ..7.175

SHEETS, Long Terne Steel
(Commercial Quality)
BeechBott'm,W.Va.W10 5.675
Gary,Ind. U5 .....5.675
Mansfield,O. E6 .....6.25
Middletown,O. A10 ....5.675
Niles,O. N12 .....6.00
Weirton,W.Va. W6 ....5.675

SHEETS, Long Terne, Ingot Iron
Middletown,O. A10 ....6.075

SHEETS, Well Casing
Fontana,Calif. K1 ....6.20

—STRIP—

STRIP, Hot-Rolled Carbon
Ala.City,Ala.(21) R2 ..3.92
Alton,Ill. L1 .....4.20
Ashland,Ky.(8) A10 ...3.925
Atlanta A11 .....4.175
Bessemer,Ala. T2 ....3.925
Bridgeport,Con.(10)S15 4.425
Buffalo (27) R2 .....3.925
Butler,Pa.(8) A10 ...3.925
Carnegie,Pa. S18 .....4.425
Conshohocken,Pa. A3 .4.325
Detroit M1 .....4.40
Ecorse,Mich. G5 .....4.225
Fairfield,Ala T2 .....3.925
Fontana,Calif. K1 .....4.70
Gary,Ind. U5 .....3.925
Houston,Tex. S5 .....4.425
Ind.Harbor,Ind. I-2,Y1.3.925
Johnstown,Pa.(25) B2..3.925
KansasCity,Mo.(9) S5..4.625
Lackw'na,N.Y.(32) B2.3.925
LosAngeles(25) B3 ....4.675
Milton,Pa. B6 .....4.35
Minnequa,Colo, C10 ....5.025
NewBritain(10) S15 ...4.425
N.Tonawanda,N.Y. B11.3.925
Pittsburg,Calif. C11 ...4.675
Riverdale,Ill. A1 .....3.925
SanFrancisco S7 .....5.10
Seattle(25) B3 .....4.925
Seattle N14 .....4.925
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. W14 ....3.925
So.SanFrancisco(25) B3.4.625
SparrowsPoint,Md. B2 .3.925
Torrance,Calif. C11 ...4.675
Warren,O. R2 .....3.925
Weirton,W.Va. W6 ....4.025
Youngstown Y1, U5 ...3.925

STRIP, Hot-Rolled Alloy

	Cu Alloy	Cu Fe
Bridgeport,Conn.(10)S15	6.45	
Carnegie,Pa. S18	.....6.45	
Fontana,Calif. K1	.....7.80	
Gary,Ind. U5	.....6.40	
Houston,Tex. S5	.....6.90	
KansasCity,Mo. S5	....7.10	
LosAngeles B3	.....7.60	
NewBritn.,Conn.(10)S15	6.45	
Sharon,Pa. S3	.....6.45	
So.Chicago W14	.....6.40	
Youngstown U5	.....6.40	

STRIP, Hot-Rolled
High-Strength Low-Alloy
Bessemer,Ala. T2 ....5.65
Conshohocken,Pa. A3 ..6.20
Ecorse,Mich. G5 .....6.50
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 .....7.05
Gary,Ind. U5 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Lackawanna,N.Y. B2 ..6.00
LosAngeles(25) B3 ....6.40
Seattle(25) B3 .....6.65
Sharon,Pa. S3 .....5.95
So.SanFrancisco(25)B3 .6.40
SparrowsPoint,Md. B2 ..6.00
Warren,O. R2 .....5.95
Weirton,W.Va. W6 ....6.30
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

STRIP, Hot-Rolled Ingot Iron
Ashland,Ky.(8) A10 ...4.175
Warren,O. R2 .....4.525

STRIP, Cold-Rolled Carbon
Anderson,Ind. G6 .....5.80
Bridgeprt.Conn.(10) S15.6.15
Butler,Pa. A10 .....5.45
Cleveland A7, J5 .....5.45
Dearborn,Mich. D3 ....6.05
Detroit D2 .....5.95
Detroit M1 .....5.45
Dover,O. G6 .....5.80
Ecorse,Mich. G5 .....5.65
Follansbee,W.Va. F4 ...5.45
Fontana,Calif. K1 .....7.35
FranklinPark,Ill.(40) T6.5.70
Ind.Harbor,Ind. I-2 ...5.70
Lackawanna,N.Y. B2 ...5.45
LosAngeles C1 .....7.50
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 .....5.45
NewBritain(10) S15 ....6.15
NewCastle,Pa.(14) B4 ..5.45
NewCastle,Pa. E5 ....5.95
NewHaven,Conn. A7 ...5.95
NewHaven,Conn. D2 ...6.20
Pawtucket,R.I. R3 ....6.80
Pawtucket,R.I.(21) N8..6.65
Riverdale,Ill. (40) A1 ..5.70
Rome,N.Y.(29) R6 ....5.45
Sharon,Pa. S3 .....5.80
SparrowsPoint,Md. B2 ..5.45
Trenton,N.J. R5 .....7.00
Wall'ford,Conn. W2(50) .6.40
Warren,O.(40) T5 .....5.95
Warren,O. R2 .....5.45
Weirton,W.Va. W6 ....5.45
Worcester,Mass. W19....7.05
Youngstown C8 .....5.95
Youngstown Y1 .....5.45

STRIP, Cold-Rolled Alloy Steel
Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....12.00
Dover,O. G6 .....12.00
Fontana,Calif. K1 ....13.65
Harrison,N.J. C18 ....12.00
NewBritn,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8.12.15
Pawtucket,R.I.(12) N8.12.45
Sharon,Pa. S3 .....12.00
Worcester,Mass. A7 ..12.30
Youngstown C8 .....12.00

STRIP, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5 .....7.80
Cleveland A7 .....8.15
Dearborn,Mich. D3 ....7.90
Dover,O. G6 .....8.00
Ecorse,Mich. G5 .....8.50
Lackawanna,N.Y. B2 ..8.15
Sharon,Pa. S3 .....7.65
SparrowsPoint,Md. 8.15
Warren,O. R2 .....7.60
Weirton,W.Va. W6 ....8.30
Youngstown Y1 .....8.30

STRIP, Cold-Rolled Ingot Iron
Warren,O. R2 .....6.05

STRIP, Electro Galvanized
Dover,O. G6 .....5.70
Warren,O. T5 .....5.70
Weirton,W.Va. W6 ....5.45
Youngstown C8 .....5.95

TIGHT COOPERAGE HOOP
Atlanta A11 .....4.65
Riverdale,Ill. A1 .....4.50
Sharon,Pa. S3 .....4.55
Youngstown U5 .....4.35

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div. H. K. Porter Co.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur D. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Co.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lake Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W.Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 StainlessWeldedProducts
S26 Specialty Wire Co. Inc.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div.,Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel
Y1 Youngstown Sheet&Tube

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea, O. C7	...	8.00	8.60	10.55	12.85
Bridgeport, Conn. (10) S15	6.15	8.00	8.60	10.55	12.85
Bristol, Conn. W1	...	...	8.90	10.85	....
Carnegie, Pa. S18	...	8.00	8.60	10.55	12.85
Cleveland A7	5.45	7.65	8.60	10.55	12.85
Dearbon, Mich. D3	6.05	8.25	8.85	....	....
Detroit D2	6.45	7.85	8.45	10.55	....
Dover, O. G6	6.05	8.00	8.60	10.55	12.85
FranklinPark, Ill. T6	5.80	7.80	8.75	10.70	....
Harrison, N.J. C18	...	...	8.90	10.85	13.15
Mattapan, Mass. T6	6.30	7.95	8.90	10.85	13.15
NewBritn., Conn. (10) S15	6.15	8.00	8.60	10.55	12.85
NewCastle, Pa. B4	5.80	8.00	8.60	....	....
NewCastle, Pa. E5	5.95	8.00	8.60	10.55	12.85
NewHaven, Conn. D2	6.70	7.95	8.55	10.50	....
NewYork W3	...	8.30	8.90	10.85	13.15
Pawtucket, R.I. N8:					
Cleve. or Pitts. Base	...	8.00	8.60	10.55	12.85
Worcester, Mass., Base	6.65	7.95	8.90	10.85	13.15
Sharon, Pa. S3	...	8.00	8.60	10.55	12.85
Trenton, N.J. R5	...	8.30	8.90	10.85	13.15
Wallingford, Conn. W2	6.65	7.95	8.90	10.85	13.15
Warren, O. T5	6.20	8.00	8.60	10.55	12.85
Weirton, W.Va. W6	5.80	8.00	8.60	10.55	12.85
Worcester, Mass. A7	5.75	7.95	8.90	10.85	13.15
Worcester, Mass. T6	6.30	7.95	8.90	10.85	13.15
Youngstown C8	...	8.00	8.60	10.55	12.85
Spring Steel (Tempered)					
Bristol, Conn. W1	...	...	12.50	15.00	....
FranklinPark, Ill. T6	...	...	12.50	15.00	18.00
Trenton, N.J. R5	...	...	12.50	15.00	18.00
Harrison, N.J. C18	...	...	12.50	15.00	18.00
NewYork W3	...	...	12.50	15.00	18.00
Worcester, Mass. T6	...	...	12.50	15.00	18.00
Youngstown C8	...	...	10.30	12.50	15.35

SILICON STEEL

SHEETS, SILICON, H.R. or C.R. COILS (cut lengths ½c lower) (22 Ga.)	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	8.35	9.60	10.40
Brackenridge, Pa. A4	...	...	8.85	10.10	10.90
GraniteCity, Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor, Ind. I-2	8.05	8.35	8.85	(34)	...
Mansfield, O. E6 (cut lengths)	7.55	7.85	8.35	9.60	10.40
Newport, Ky. N9 (cut lengths)	...	7.85	8.35	9.60	10.40
Niles, O. N12 (cut lengths)	...	7.55	7.85	8.35	...
Vandergrift, Pa. U5	...	8.35	8.85	10.10	10.90
Warren, O. R2	8.05	8.35	8.85	10.10	10.90
Zanesville, O. A10	...	8.35	8.85	10.10	10.90

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)	Transformer Grade 72	65	58	52
BeechBottom W10 (cut lengths)	10.95	11.50	12.20	13.00
Brackenridge, Pa. A4	11.45	....	....	....
Newport, Ky. N9 (cut lengths)	10.95	....	....	....
Vandergrift, Pa. U5	11.45	12.00	12.70	13.50
Warren, O. R2	11.45	....	....	....
Zanesville, O. A10	11.45	12.00	12.70	13.50

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler, Pa. A10 (C.R.)	....	....	16.05	16.55
Vandegrift, Pa. U5	14.00	14.85	15.85	16.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa, Pa. J5	$7.40	$7.65	$8.05
Fairfield, Ala. T2	7.50	7.75	8.15
Fairless, Pa. U5	7.50	7.75	8.15
Gary, Ind. U5	7.40	7.65	8.05
GraniteCity, Ill. G4	7.60	7.85	8.25
IndianaHarbor, Ind. I-2, Y1	7.40	7.65	8.05
Irvin, Pa. U5	7.40	7.65	8.05
Niles, O. R2	7.40	...	...
Pittsburg, Calif. C11	8.15	8.40	8.80
SparrowsPoint, Md. B2	7.50	7.75	8.15
Weirton, W.Va. W6	7.40	7.65	8.05
Yorkville, O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa, Pa J5	$8.70	$8.95
Fairfield, Ala. T2	8.80	9.05
Fairless, Pa. U5	8.80	9.05
Gary, Ind. U5	8.70	8.95
Ind. Har. I-2, Y1	8.70	8.95
Irvin, Pa. U5	8.70	8.95
Pitts., Cal. C11	9.45	9.70
Sp. Pt., Md. B2	8.80	9.05
Warren, O. R2	8.70	...
Weirton, W.Va. W6	8.70	8.95
Yorkville, O. W10	8.70	8.95

BLACK PLATE (Base Box)

Aliquippa, Pa. J5	$6.50
Fairfield, Ala. T2	6.60
Fairless, Pa. U5	6.60
Gary, Ind. U5	6.50
GraniteCity, Ill. G4	6.70
Ind. Harbor, Ind. I-2, Y1	6.50
Irvin, Pa. U5	6.50
Niles, O. R2	6.50
Pittsburg, Calif. C11	7.25
SparrowsPoint, Md. B2	6.60
Warren, O. R2	6.50
Weirton, W.Va. W6	6.50
Yorkville, O. W10	6.50

HOLLOWARE ENAMELING

Black Plate (29 gage)

Follansbee, W.Va. F4	6.10
Gary, Ind. U5	6.10
GraniteCity, Ill. G4	6.30
Ind. Harbor, Ind. Y1	6.10
Irvin, Pa. U5	6.10
Yorkville, O. W10	6.55

MANUFACTURING TERNES

(Special Coated)

Fairfield, Ala. T2	$7.85
Gary, Ind. U5	7.75
Irvin, Pa. U5	7.75
Yorkville, O. W10	7.75

MANUFACTURING TERNES, 8 lb

(Commercial Quality)

Gary, Ind. U5	$9.75
Yorkville, O. W10	9.75

MANUFACTURING TERNES, LT.

Coated, 6 lb

Yorkville, O. W10	$8.65

ROOFING SHORT TERNES

(8 lb Coated)

Gary, Ind. U5	9.75

—WIRE—

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity, Ala. R2	5.525
Aliquippa, Pa. J5	5.525
Atlanta A11	5.775
Alton, Ill. L1	5.75
Bartonville, Ill. K4	5.625
Buffalo W12	5.525
Chicago W13	5.525
Cleveland A7, C20	5.525
Crawfordsville, Ind. M8	5.625
Donora, Pa. A7	5.525
Duluth, Minn. A7	5.525
Fairfield, Ala. T2	5.525
Fostoria, O. (24) S1	6.02
Houston S5	5.925
Johnstown, Pa. B2	5.525
Joliet, Ill. A7	5.525
KansasCity, Mo. S5	6.125
Kokomo, Ind. C16	5.625
LosAngeles B3	6.475
Minnequa, Colo. C10	5.775
Monessen, Pa. P7	5.525
No. Tonawanda B11	5.525
Palmer, Mass. W12	5.825
Pittsburg, Calif. C11	6.475
Portsmouth, O. P12	5.725
Rankin, Pa. A7	5.525
So. Chicago, Ill. R2	5.525
So. SanFrancisco C10	6.475
SparrowsPoint, Md. B2	5.625
Sterling, Ill. (1) N15	5.525
Struthers, O. Y1	5.525
Torrance, Calif. C11	6.475
Waukegan, Ill. A7	5.525
Worcester, Mass. A7	5.825

WIRE, MB Spring, High Carbon

Aliquippa, Pa. J5	6.925
Alton, Ill. L1	7.15
Bartonville, Ill. K4	7.025
Buffalo W12	6.925
Cleveland A7	6.925
Donora, Pa. A7	6.925
Duluth, Minn. A7	6.925
Fostoria, O. S1	6.925
Johnstown, Pa B2	6.925
Milbury (12) N6	8.725
Minnequa, Colo. C10	7.175
Monessen, Pa. P7	6.925
Monessen, Pa. P16	6.95
Muncie, Ind. I-7	7.125
Palmer, Mass. W12	7.225
Pittsburg, Calif. C11	7.875
Roebling, N.J. R5	7.225
Portsmouth, O. P12	6.925
So. Chicago, Ill. R2	6.925
So. SanFran. C10	7.875
SparrowsPt., Md. B2	7.025
Struthers, O. Y1	6.925
Trenton, N.J. A7	7.225
Waukegan, Ill. A7	6.925
Worcester A7, J4	7.225
Worcester T6, W12	7.225

WIRE, Upholstery Spring

Aliquippa, Pa. J5	6.625
Alton, Ill. L1	6.85
Buffalo W12	6.625
Cleveland A7	6.625
Donora, Pa. A7	6.625
Duluth, Minn. A7	6.625
Johnstown, Pa. B2	6.625
LosAngeles B3	7.575
Minnequa, Colo. C10	6.875
Monessen, Pa. P7	6.625
Monessen, Pa. P16	6.625
NewHaven, Conn. A7	6.925
Palmer, Mass. W12	6.925
Pittsburg, Calif. C11	7.575
Portsmouth, O. P12	6.625
Roebling, N.J. R5	6.925
So. Chicago, Ill. R2	6.625
So. SanFrancisco C10	7.575
SparrowsPoint, Md. B2	6.725
Torrance, Calif. C11	7.575
Trenton, N.J. A7	6.925
Waukegan, Ill. A7	6.625
Worcester, Mass. A7	6.925

WIRE, Fine & Weaving (8" Coils)

Alton, Ill. L1	10.75
Bartonville, Ill. K4	10.65
Buffalo W12	10.55
Chicago W13	10.55
Cleveland A7	10.55
Crawf'sville, Ind. M8	10.55
Fostoria, O. S1	10.55
Johnstown, Pa. B2 (43)	8.90
Kokomo, Ind. C16	10.55
Monessen, Pa. P16	10.55
Muncie, Ind. I-7	10.75
Palmer, Mass. W12	10.85
Roebling, N.J. R5	10.85
So. SanFrancisco C10	10.90
Waukegan, Ill. A7	10.55
Worcester, Mass. A7	10.85
Worcester, Mass. T6	10.85

WIRE, Galv'd ACSR for Cores

Bartonville, Ill. K4	9.50
Johnstown, Pa. B2	9.50
Monessen, Pa. P16	9.50
Muncie, Ind. I-7	9.70
Roebling, N.J. R5	9.80
SparrowsPt., Md. B2	9.60

ROPE WIRE (A)

Alton, Ill. L1	9.45
Bartonville, Ill. K4	9.35
Buffalo W12	9.35
Fostoria, O. S1	9.35
Johnstown, Pa. B2	9.35
Monessen, Pa. P16	9.35
Monessen, Pa. P7	9.35
Muncie, Ind I-7	9.55
Palmer, Mass. W12	9.65
Portsmouth, O. P12	9.35
Roebling, N.J. R5	9.65
SparrowsPt. B2	9.45
Struthers, O. Y1	9.35
Worcester J4, T6	9.65

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Tire Bead

Alton, Ill. L1	12.75
Bartonville, Ill. K4	12.65
Monessen, Pa. P16	12.00
Roebling, N.J. R5	12.85

WIRE, Cold-Rolled Flat

Anderson, Ind. G6	7.45
Buffalo W12	7.45
Cleveland A7	7.45
Craf'sville, Ind. M8	7.55
Dover, O. G6	7.45
Fostorio, O. S1	*7.45*
Kokomo, Ind. C16	7.55
FranklinPark, Ill. T6	7.60
Massillon, O. R8	7.45
Monessen, Pa. P16	*8.00*
Monessen, Pa. P7	7.45
Pawtkt. R.I. (12) N8	7.75
Trenton, N.J. R5	7.75
Worcester A7, T6 W12	7.75

WIRE, Merchant Quality

(6 to 8 gage)	An'ld. Galv.
AlabamaCity R2	6.675 7.075
Aliquippa J5	6.675 7.20*
Atlanta A11	6.925 7.475
Bartonville (19) K4	6.675 7.225
Buffalo W12	6.675 7.075
Cleveland A7	6.675 ....
CrawfordsvilleM8	6.775 7.325
Donora, Pa. A7	6.675 7.075†
Duluth, Minn. A7	6.675 7.075†
Fairfield T2	6.675 7.075†
Houston, Tex. S5	7.075 7.475
JohnstownB2 (48)	6.675 7.225
Joliet, Ill. A7	6.675 7.075†
KansasCity, Mo. S5	7.275 7.675
Kokomo C16	6.775 7.175
LosAngeles B3	7.625 ....
Minnequa C10	6.925 7.325**
Monessen P7 (48)	6.675 7.225
Palmer W12	6.975 7.375
Pitts. Calif. C11	7.625 8.025†
Prtsmth (18) P12	6.575 ....
Rankin A7	6.675 7.075†
So. Chicago R2	6.075 6.325
So. S. Frn. (48) C10	7.625 8.025**
Spar'wsPt. B2 (48)	6.775 7.325
Sterl'g (1) (48) N15	6.675 7.225
Struthers, O. Y1	6.675 7.175
Worcester A7	6.975 ....

*Based on 10c zinc; †5c zinc; **Subject to zinc equalization extras.

WIRE (16 gage)	An'ld. Galv. Stone	Stone
Aliquippa J5	10.63	12.72*
Bartonville (19) K4	10.73	12.51
Cleveland A7	12.50	....
Crawfordsville M8	12.50	14.35
Fostoria, O. S1	12.60	14.15
Johnstown B2	12.50	14.35
Kokomo C16	12.60	14.15
Min'qua C10	12.75	14.45**
Palmer, Mass. W12	12.50	14.05
Pitts. Calif. C11	12.85	14.40†
SparrowsPt. B2	12.60	14.45
Sterling (1) N15	10.73	12.15
Waukegan A7	12.50	14.05†
Worcester A7	12.80	....

*Based on 11c zinc; †5c zinc; **Subject to zinc equalization extras.

WIRE, Barbed	Col.
AlabamaCity, Ala. R2	153
Aliquippa J5	150*
Atlanta A11	159
Bartonville, Ill. (19) K4	156
Crawfordsville, Ind. M8	159
Donora, Pa. A7	153†
Duluth, Minn. A7	153†
Fairfield, Ala. T2	153†
Houston, Tex. S5	161
Johnstown, Pa. B2	156
Joliet, Ill. A7	153
KansasCity, Mo. S5	165
Kokomo, Ind. C16	155
Minnequa, Colo. C10	159**
Monessen, Pa. P7	157
Pittsburg, Calif. C11	173†
Rankin, Pa. A7	153†
So. Chicago, Ill. R2	153
S. SanFrancisco C10	173**
SparrowsPoint, Md. B2	158
Sterling, Ill. (1) N15	156

†Based on 5c zinc; *11c zinc; **Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity, Ala. R2	140
Ala. City, Ala. 17 ga. R2	235
Ala. City, Ala. 18 ga. R2	245
Aliqp'pa, Pa. 9-14½ ga. J5	143*
Atlanta A11	146
Bartonville, Ill. (19) K4	142
Crawfordsville, Ind. M8	145
Donora, Pa. A7	140†
Duluth, Minn. A7	140†
Fairfield, Ala. T2	140†
Houston, Tex. S5	148
Johnstown, Pa. B2	143
Johnstown 17ga., 6" B2	234
Johnstown, 4"	237
Joliet, Ill. A7	140†
KansasCity, Mo. S5	152
Kokomo, Ind. C16	142
Minnequa, Colo. C10	148**
Monessen, Pa. 9 ga. P7	143
Pittsburg, Calif. C11	163†
Rankin, Pa. A7	140†
So. Chicago, Ill. R2	146
Sterling, Ill. (1) N15	143

†Based on 5c zinc; *11c zinc; **Subject to zinc equalization extras.

BALE TIES, Single Loop — Col

AlabamaCity, Ala. R2	149
Atlanta A11	153
Bartonville, Ill. (19) K4	149
Crawfordsville, Ind. M8	156
Donora, Pa. A7	149
Duluth, Minn. A7	149
Fairfield, Ala. T2	149
Joliet, Ill. A7	149
KansasCity, Mo. S5	161
Kokomo, Ind. C16	150
Minnequa, Colo. C10	150
Pittsburg, Calif. C11	177
So. Chicago, Ill. R2	149
So. SanFran., Calif. C10	177
SparrowsPoint, Md. B2	150
Sterling, Ill. (1) N15	149

NAILS, Stock

To dealers & mfrs. (7)	Col
AlabamaCity, Ala. R2	138
Aliquippa, Pa. J5	138
Atlanta A11	138
Bartonville, Ill. (19) K4	138
Chicago, Ill. W13	138
Cleveland A9	138
Crawfordsville, Ind. M8	138
Donora, Pa. A7	138
Duluth, Minn. A7	138
Fairfield, Ala. T2	138
Galveston, Tex. D7	138
Houston, Tex. S5	138
Johnstown, Pa. B2	138
Joliet, Ill. A7	138
KansasCity, Mo. S5	140
Kokomo, Ind. C16	138
Minnequa, Colo. C10	138
Monessen, Pa. P7	138
Pittsburg, Calif. C11	158
Portsmouth, O. P12	138
Rankin, Pa. A7	138
So. Chicago, Ill. R2	138
SparrowsPt., Md. B2	138
Sterling, Ill. (1) N15	138
Worcester, Mass. A7	138

NAILS, Cut (100 lb keg) to dealers (33)

Conshohocken, Pa. A3	$8.8
Wheeling, W.Va. W10	8.

STAPLES, Polished, Stock

To dealers & mfrs. (7)	C
AlabamaCity, Ala. R2	1
Aliquippa, Pa. J5	1
Atlanta A11	1
Bartonville, Ill. (19) K4	1
Crawfordsville, Ind. M8	1
Donora, Pa. A7	1
Duluth, Minn. A7	1
Fairfield, Ala. T2	1
Johnstown, Pa. B2	1
Joliet, Ill. A7	1
Kokomo, Ind. C16	1
Minnequa, Colo. C10	1
Monessen, Pa. P7	1
Pittsburg, Calif. C11	1
Portsmouth, O. P12	1
Rankin, Pa. A7	1
So. Chicago, Ill. R2	1
Sparrows Pt. Md. B2	1
Sterling, Ill. (1) N15	1
Worcester, Mass. A7	1

—FENCE POSTS—

ChicagoHts., Ill. C2, I-2	
Duluth, Minn. A7 (49)	
Franklin, Pa. F5	
Johnstown, Pa. B2	
Marion, O. P11	
Minnequa, Colo. C10	
Moline, Ill. R2	
So. Chicago, Ill. R2	
Tonawanda, N.Y. B12	
Williamsport, Pa. S19	

AMLESS STANDARD PIPE, T & C

Carload discounts from list, %

e—Inches	2		2½		3		3½		4		5		6	
st Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
unds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
iquippa, Pa. J5 (‡)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25
nbridge, Pa. N2 (†)	18.25	...	22.25	...	24.75	...	26.25	...	26.25	...	26.00	...	28.50	...
rain, O. N3 (*)	15.75	4.5	19.75	5.5	22.25	8	23.75	9.5	23.75	9.50	23	8.75	25.5	11.25
ungstown Y1 (††)	15.75	list	19.75	2.50	22.25	5.00	23.75	6.50	23.75	6.50	23.00	5.75	25.50	8.25

LECTRIC WELD STANDARD PIPE, T & C

ungstown R2 (††)	15.75	list	19.75	2.5	22.25	5.0	23.75	6.5	23.75	6.5	23.0	5.75	25.5	8.25

UTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

ze—Inches	⅛		¼		⅜		½		¾		1		1¼		1½	
st Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c		27.5c	
unds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv.
iquippa, Pa. J5 (‡)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
lton, Ill. L1 (§)	...	...	....	...	....	....	23.25	7	26.25	11	28.75	14.5	31.25	15.5	31.75	16.5
enwood, W. Va. W10(††)	25.5	+0.75	17.75	+6	10.25	+10.75	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
utler, Pa. F6 (†)	26.5	+2.75	19.5	+7.25	12.5	+13	....	..	....	..	....	...	....	...	....	...
tna, Pa. N2 (†)	28	+1.25	22	+4.75	16	+9.5	28.75	9.5	31.75	13.5	34.25	17	36.75	18.75	37.25	19.75
ontana, Calif. K1 (††)	...	...	....	...	....	....	13.25	+3	16.25	1	18.75	4.5	21.25	5.5	21.75	6.5
d. Harbor Y1 (††)	...	...	....	...	....	....	25.25	9	28.25	13	30.75	16.5	33.25	17.5	33.75	18.5
orain, O. N3 (*)	...	...	....	...	....	....	26.25	16	29.25	20	31.75	23.5	34.25	23	34.75	24
haron, Pa. S4 (†)	26.5	—0.25	19.5	+4.25	12.5	+8.5	....	..	....	..	....	...	....	...	....	...
haron, Pa. M6	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
parrows Pt., Md. B2 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	24.25	8	27.25	12	29.75	15.5	32.25	16.5	32.75	17.5
oungstown Y1 (††)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
oungstown Y1 (††)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
heatland, Pa. W9 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	26.25	10	29.25	14	31.75	17.50	34.25	18.50	34.75	19.50

ize—Inches	2		2½		3		3½		4	
ist Per Ft.	37c		58.5c		76.5c		92c		$1.09	
ounds Per Ft.	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
liquippa, Pa. J5 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....
lton, Ill. L1 (§)	32.25	17	33.75	17	33.75	17	....	....	....	....
enwood, W.Va. W10(††)	35.25	20	36.75	20	36.75	20	27.75	10.5	27.75	10.5
tna, Pa. N2 (†)	37.75	20.25	39.25	21	39.25	21	30.25	11.5	30.25	11.5
ontana, Calif. K1 (††)	22.25	7	23.75	7	23.75	7	....	....	....	....
d. Harbor, Ind Y1 (††)	34.25	19	35.75	19	35.75	19	....	....	....	....
orain, O. N3 (*)	35.25	24.5	36.75	23	36.75	23	....	....	....	....
haron, Pa. M6	35.25	20	36.75	20	36.75	20	....	....	....	....
parrows Pt., Md. B2 (§)	32.25	18	34.75	18	34.75	18	25.75	8.5	25.75	8.5
oungstown R2 (††)	35.25	20	36.75	20	36.75	20	27.75	10.5	27.75	10.5
oungstown Y1 (††)	35.25	20.00	36.75	20.00	36.75	20.00	....	....	....	....
heatland, Pa. W9 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), 11.00c; (††), 10.50c-11.50c; with discounts adjusted on price of zinc at time of shipment.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98 + % Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N.Y., c.l., in bags	11.25
Electrolytic iron:	
Annealed, 99.5% Fe.	42.50
Unannealed (99+ % Fe)	36.50
Unannealed (99+ % Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Cariots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots.	78.00
Brass, 20-ton lots	29.50-36.50
Bronze, 10-ton lots	51.00-60.00
Copper:	
Electrolytic	43.25
Reduced	43.25
Lead	21.75
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	47.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	91.00
Tin	14.00*
Zinc, 10-ton lots	17.50-25.00
Tungsten	Dollars
Melting grade, 99%	
60 to 200 mesh:	
1000 lb and over	5.35
Less than 1000 lb	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

* plus cost of metal.

BOILER TUBES

Net base c.l prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
...	13	....	21.31	18.44
¼	13	....	25.24	18.12
½	13	23.12	27.89	20.01
¾	13	26.84	32.37	23.66
1	13	30.08	36.28	26.51
1¼	13	34.18	41.23	29.86
1½	12	37.10	44.75	32.41
1½	12	40.51	48.86	35.70
2¾	12	43.85	52.90	38.66
3	12	45.92	55.39	41.23

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. Tee Rails All No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa. U5	4.325	4.225	4.275	5.20
Ensley,Ala, T2	4.325	4.225	....	5.20
Fairfield,Ala. T2	....	....	....	5.20
Gary,Ind. U5	4.325	4.225	4.275	...
Huntington,W.Va. W7	....	....	....	5.20
IndianaHarbor,Ind. I-2	4.325	4.225	4.275	...
Johnstown,Pa. B2	....	....	...(16)	5.20
Lackawanna,N.Y. B2	4.325	4.225	....	5.20
Minnequa,Colo. C10	4.325	4.125	....	5.70
Steelton,Pa. B2	4.325	4.225	....	...
Williamsport,Pa. S19	....	....	....	5.20

TIE PLATES	
Fairfield,Ala. T2	5.125
Gary,Ind. U5	5.125
Ind.Harbor,Ind I-2	5.125
Lackawanna,N.Y. B2	5.125
Minnequa,Colo. C10	5.125
Pittsburg,Calif. C11	5.275
Seattle B3	5.275
Steelton,Pa. B2	5.125
Torrance,Calif. C11	5.275

TRACK BOLTS (20) Treated	
KansasCity,Mo. S5	11.00
Lebanon,Pa. (31) B2	10.75
Minnequa,Colo. C10	11.00
Pittsburgh P14	11.00
Pittsburgh O3	11.00

JOINT BARS	
Bessemer,Pa. U5	5.275
Fairfield,Ala. T2	5.275
Ind.Harbor,Ind. I-2	5.275
Joliet,Ill. U5	5.275
Lackawanna,N.Y. B2	5.275
Minnequa,Colo. C10	5.275
Steelton,Pa. B2	5.275

AXLES	
Ind.Harbor,Ind. S13	6.50
Johnstown,Pa. B2	6.50

STANDARD TRACK SPIKES	
Ind.Harbor,Ind. I-2, Y1	7.05
KansasCity,Mo. S5	7.30
Lebanon,Pa. B2	7.05
Minnequa,Colo C10	7.05
Pittsburgh J5	7.05
Seattle B3	7.55
So.Chicago,Ill. R2	7.05
Struthers,O. Y1	7.05
Youngstown R2	7.05

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in.,larger 8.90c

$\frac{7}{16}$-in. under ..... 26.5 off

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in & smaller diam.	4
$\frac{9}{16}$-in. & ⅝-in.	5
¾-in. and larger	3
Longer than 6 in.:	
All diams.	+4
Lag bolts, all diams.:	
6 in. and shorter	12
over 6 in. long	8
Ribbed Necked Carriage	5
Blank	25
Plow	25
Step, Elevator, Tap and Sleigh Shoe	12
Tire Bolts	List
Boiler & Fitting-Up Bolts	23

NUTS

H.P. & C.P., regular & heavy:	
Square, all sizes	58
H.P., Hex, regular & heavy:	
¾" and smaller	58
⅞" to 1⅛", inclusive	60
1¼" to 1½", inclusive	62
1⅝" and larger	58
C.P. Hex, regular heavy:	
All sizes	58
Hot Galv. Nuts (all types):	
¾" and smaller	40
⅞" to 1½", inclusive	43
Finished Hex Nuts:	
New standard, all sizes	58
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	34
1 in. and smalled diam. x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼-in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5 & 10
Plated finishes	30 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	38
¾-in. through 1 in.	22
Longer than 6 in.:	
⅝-in. and smaller	20
¾-in. through 1 in.	7

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1¼" to 1 7/16"; 1 7/16" to 1 15/16" 4.58c; 1 15/16" to 7 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.40c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(48) 6-7 gage.
(49) U-post; add 2 cols. for T-post.
(50) 0.025 gage; 6.55c for 0.026 to 0.068 gage; 6.65c for 0.069 gage and over.

STAINLESS STEEL MILL PRICES

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B ...	18.50	24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S ...	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
330	....	....	....	....	....	....	70.00	73.75	....
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F ...	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,C		28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	....	....	....	....	....	35.75	48.25	....
446	....	....	....	33.75	38.25	53.00	39.50	40.75	59.75	71.00
501	....	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Division, U. S. Steel Corp.; Armco Steel Corp.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur D. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Co.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Division, Borg Warner Corp.; Jessop Steel Co.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; Mc Louth Steel Corp.; Metal Forming Corp.; Page Steel & Wire Division, American Chain & Cable Co. Inc.; Republic Steel Corp.; Rome Mfg. Co.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Stainless Welded Products Inc.; Superior Steel Corp.; Timken Roller Bearing Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 20%	Sheets: Copper Base Both Sid
302	....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	.....	144.00
316	32.60	37.70-42.75	42.75	....
318	37.00	42.20	.....	....
321	29.30	34.40-37.00	37.00	111.00
347	30.40	35.50-40.50	40.50	130.00
405	23.40	30.60	.....	....
410	22.90	30.10	.....	....
430	22.90	30.10	.....	....
Inconel ..	41.23	54.18	.....	165.00
Nickel ..	37.50	50.90	.....	....
Monel ...	38.90	51.80	.....	....
Copper* .	....	.....	46.00	....

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sid
Copper*	27.85	35.85	24.00	32.25

* Deoxidized. Production points: Stainless, sheets, Ne Castle, Ind. I-4; stainless-clad plates, Claymont Del. C2 Coatesville, Pa. L7, New Castle, Ind. I-4 and Washingto Pa. J3; nickel, inconel, monel-clad plates Coatesville L copper-clad strip, Carnegie, Pa. S18. Production point f copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per
Regular Carbon .	0.25-.285	5% Cr Hot Work	0.
Extra Carbon ..	0.33-.340	W-Cr Hot Work	0.
Special Carbon ..	0.35-.360	V-Cr Hot Work	0.
Oil Hardening ...	0.370-.39	Hi-Carbon-Cr. ..	0.665-

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per
20.25	4.25	1.6	12.25	...	4.0
18.25	4.25	1	4.75	...	2.3
18	4	2	9	...	2.565-2.6
18	4	2	...	...	1.8
18	4	1	...	...	1.580-1.6
13.5	4	3	...	...	1.8
6.4	4.5	1.9	...	5	1.0
6	4	3	...	6	1.3
2	1.4	1.2	...	...	0.4
1.5	4	1	...	8.5	0.8

Tool steel producers include: A4, A8, B2 B8, C4, C 13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON, Gross Ton

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies on page 159.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Bethlehem,Pa. B2	$58.00	$58.50	$59.00	$59.50
New York, del.	....	62.28	62.78	....
Newark, del.	61.02	61.52	62.02	62.52
Philadelphia, del.	60.75	61.25	61.75	62.25
Birmingham District				
AlabamaCity,Ala. R2	52.38	52.88	....	...
Birmingham R2	52.38	52.88	....	...
Birmingham U6	....	52.88	....	....
Woodward,Ala. W15	52.38	52.88	....	....
Cincinnati, del.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	
No. Tonawanda,N.Y. T9	....	56.50	57.00	....
Boston, del.	66.65	67.15	67.65	....
Rochester,N.Y., del.	59.02	59.52	60.02	....
Syracuse,N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon,Mich., del.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	...
Akron,O., del. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	....
Pitts.,N.&S. sides, Ambridge, Aliquippa, del.	57.37	57.87	57.87	....
McKeesRocks, del.	57.04	57.54	57.54	....
Lawrenceville, Homestead, Wilmerding, Monaca, del.	57.66	58.16	58.16	....
Verona, Trafford, del.	58.19	58.69	58.69	....
Brackenridge, del.	58.45	58.95	58.95	....
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., del.	60.90	....	61.40	61.90
Duluth I-3	....	....	56.50	....
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	....	63.25	63.75	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	57.50	58.00	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
Lone Star,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T3	....	....	58.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	60.00	60.50	61.00	61.50
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....
Troy, N. Y. R2	58.00	58.50	59.00	....

*Low phos, southern grade

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage there over base grade, 1.75-2.25%, except on low phos iron on which ba is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and ov

Manganese: Add 50 cents per ton for each 0.50% manganese over 1 or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton e each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$67
Buffalo H1	68

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max

NiagaraFalls,N.Y. P15	$91
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	95
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frt. allowed K2	98
Wenatchee,Wash., OH & Fdry, freight allowed K2	98

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$6
Rockwood,Tenn. T3	6
Steelton,Pa. B2	6
Philadelphia, delivered	6
Troy,N.Y. R2	6

HOW LINDBERG STEEL TREATING COMPANY HELPS MOW YOUR LAWN

Gus Stuart next door . . Tom Dougherty down the street . . and Harry Van Hook in the next town are taking it easy.

For these lazy, lucky critters live in the era of the power lawn mower . . they just give it the gun, and zoom . . a beer-and-a-half later the yard is mowed, slick as a whistle.

We're not about to tell you Lindberg Steel Treating Company is solely responsible for the power lawn mower industry. That isn't exactly the case. But, along with dozens of designers, engineers, and production men, we kicked in our two cents worth.

Quite a few power lawn mowers have cast aluminum shells . . one of them is the "Lawn-Boy" made by *Outboard Marine & Manufacturing Company**. "*Outboard*" needed mold dies to produce these mower shells . . and the dies had to be heat treated. They were intricate, had plenty of irregular sections, and they were worth $15,000.

The highly polished surface finish had to be maintained. Critical dimensions had to be held. There could be no carb or decarb, because surface cracking or "orange peeling" would result. Brinnel hardness had to be held to a narrow range. And there could be no variation in hardness uniformity.

So the job was turned over to heat treating specialists . . metallurgical engineers of Lindberg Steel Treating Company. They determined the proper cycle for preheating, soaking, cooling, and tempering.

91 short hours after delivery to Lindberg, the dies were ready to produce aluminum mower shells. Heat treating is easy . . *if* you do the *right* thing, at the *right* time, in the *right* equipment, in the *right* way. We specialize in doing heat treating . . *right*. Call us.

* *RPM Manufacturing Company Division*

A case history of Lindberg Steel Treating Co. service to American industry

LINDBERG STEEL TREATING CO.

1977 North Ruby Street, Melrose Park (Chicago), Illinois Phone: MOnroe 6-3308

lants in

ELROSE PARK, ILL.
Chicago)
977 North Ruby
MOnroe 6-3308

OCHESTER, N. Y.
20 Buffalo Rd.
Genessee 5212

T. LOUIS
50 E. Taylor
Ireside 6200

OS ANGELES
910 So. Sunol Drive
Ngelus 9-7311

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Baltimore	6.20	7.64	7.81	7.00	...	6.86	8.17[6]	12.04	6.98	6.85	7.98
Boston	6.89	7.83	9.23	7.13	...	6.87	8.35	12.28	7.06	7.13	8.26
Buffalo	6.18	7.15	9.01	6.79	...	6.35	7.70	12.17	6.59	6.68	7.88
Birmingham	6.10	7.00	8.00[2]	6.30	...	6.15	8.90	....	6.35	6.35	8.65
Charlotte, N. C.	6.95	7.80	8.69	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.18	7.12	8.05	6.42	...	6.28	7.30	11.75	6.46	6.33	7.46
Cincinnati	6.51	7.19	8.47	6.72	...	6.58	7.66	12.17	6.93	6.85	7.88
Cleveland	6.18	7.12	7.90	6.58	...	6.34	7.65	11.89	6.79	6.50	7.79
Detroit	6.45	7.32	8.34	6.71	...	6.57	7.60	11.92	6.93	6.85	7.80
Houston	7.15	7.85	9.32	7.45	...	7.45	...	....	7.35	7.20	8.55
JerseyCity,N.J.	6.54	7.45	8.72	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Los Angeles	7.25	9.00	9.35	7.55	11.20	7.15	9.10	13.05	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.22	6.59	...	6.45	7.57	11.92	6.63	6.50	7.63
Moline, Ill.	6.53	7.47	8.40	6.77	...	6.63	7.65	....	6.81	6.68	...
New York	6.54	7.45	8.72	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Newark, N. J.	6.78	7.75	9.02	7.16	...	7.06	8.43[6]	....	6.90	6.99	8.30
Norfolk, Va.	6.90	...	...	7.20	...	7.20	8.50	....	7.20	7.15	7.85
Philadelphia	6.53	7.55	8.35	7.02	8.80	6.87	8.19[6]	11.89	6.67	6.63	7.65
Pittsburgh	6.18	7.12	8.30	6.55	...	6.34	7.65	11.89	6.79	6.50	7.79
Portland, Oreg.	7.90	9.30	10.00	7.90	...	7.60	10.90	....	7.50	7.55	9.40
Richmond, Va.	6.50	7.45	8.00	7.10	...	7.05	7.95	....	7.10	6.85	8.10
St. Louis	6.48	7.42	8.35	6.72	...	6.58	7.70	12.05	6.86	6.73	7.86
St. Paul	6.84	7.78	8.71	7.08	...	6.94	8.06	....	7.12	6.99	8.12
San Francisco	7.35	8.70	10.15	7.60	...	7.15	9.75	13.05	7.25	7.20	9.25
Seattle	8.15	8.70	10.10	8.02	...	7.58	10.13	13.50	7.50	7.59	9.40
Spokane	8.15	9.40	10.10	8.50	...	7.60	10.55	13.20	7.25	7.35	9.80
Washington	6.71	8.15	8.35	7.51	...	7.37	8.43	....	7.49	7.36	8.49

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed; ** ⅜" and heavier, 8.09c for No. 12 and lighter. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; Cold-finished bars, 2000 lb and over; [2]—500 to 9999 lb; [5]—1000 to 1999 lb [6]—1000 lb and over.

Distributors Meet Keener Competition

Business is well sustained and improvement is expected, but supplies are ample in most items. Shortages continue in a few products, including cold-rolled sheets and heavy plates

New York—Steel distributors are placing fourth quarter orders for about what is wanted in product, size and specification. There are exceptions in carbon bars and structurals where mills will accept only fixed volume for certain units. This tends toward unbalance in stocks of these products, but inventories generally are substantially improved.

Sales with warehouses are becoming more competitive, notably where stocks are ample, buttweld pipe and nails included.

Mill shipments of pipe have improved materially. Carbon steel flats are still short in tonnage wanted for balanced stocks.

Warehouse sales are down some since June, seasonal factor, with an upturn expected late this month.

Aircraft quality steels can now be sold for commercial uses by warehouses and alloys are available in wider range of specifications.

Boston—Warehouse stocks are in better balance. There are scattered exceptions, including wire, flanged structurals and cold-rolled sheets. But there is a gradual improvement in the latter. Much slitting is involved in warehouse sales of flat-rolled, stimulated by the increase in quantity extras. Alloy stocks are ample for demand and fourth quarter procurement offers few problems.

Philadelphia — Warehouse business is fairly well sustained. One large distributor points out that historically August sales lag a bit behind July and in general the month is the slowest of the year. However, some distributors doubt there will be much variation one way or the other between the two months this year.

Some items remain tight, notably wide flange beams, heavy plates, and hot and cold-rolled sheets. Hot-rolled carbon bars are not in quite as pressing demand as they were several weeks ago, although most sizes are moving freely. Actually, heavy bars, at the moment at least, seem a shade easier, probably due to one or two spot openings at the mills.

Cincinnati—Warehouse inventories have improved slightly. Sheets, one of the tough items to find, are in a bit better supply, but this is not expected to last long as plants return to full scale production.

Cleveland — Warehouse operators anticipate steady improvement in demand from here on with the vacation season drawing to a close. July volume was off somewhat but not as much as normally. Currently, overall warehouse stocks continue to improve but they are still unbalanced.

Chicago—Except for some alloy products, cold-finished bars under 1 inch, and smaller sizes of hot-rolled bars, warehouse steel demand holds reasonably strong.

The aforementioned products are the only ones in which inventory gain is found. Even galvanized sheets continue to be sought after under impact of the current grain bin program. An expansion in the bin program is considered likely because of the bumper corn crop.

Birmingham—Warehousemen in the district are harassed with shortages. Some items are completely out of stock. Shipments remain steady.

Portland, Oreg.—The steel warehouse industry is in the midst of summer slackness but next month improved demand is expected. While some items are in normal supply, sheets and plates continue short. As a whole, inventories have decreased due to the scarcity of some lines.

Los Angeles—Warehouse activity during the past two weeks has turned downward slightly as a result of Korean truce "jitters" of fabricators supplying defense industries. There is no evidence of any military contract cutbacks or cancellations, however. Even the deluge of new military orders, usual with beginning of government fiscal year starting July 1, has failed to soothe nerves of some contractors.

Chromium-Stainless Sheet Orders Sag

Consumers with substantial stocks slow down buying of straight chromium grades, anticipating decontrol or more liberal distribution of nickel-bearing stock

Sheet and Strip Prices, Page 184 & 185

Boston — Consumers of straight chromium stainless, notably the 430 series, have substantial stocks and are slowing down orders in anticipation of decontrol or more liberal distribution of nickel.

Although costs will be higher, approximately 90 per cent of those who went to use of straight chromium as a substitute for nickel stainless are expected to return to the higher-nickel-bearing nickel grades when the latter are available. Meanwhile, they are going slow on building additional stainless stocks in the 400 series.

Fabricating problems, rather than corrosion properties, is a factor in this. In some cases, users stopped use of straight chromium in end-products but will go back to use of nickel-bearing stainless when it becomes available.

More orders for carbon grades of sheets and strip are being placed for November and December delivery. Range of sizes off the Fairless, Pa., mill is expanding with heavy sheets in widths and lengths required for 275-gallon household tanks expected to be available by October.

New York—Producers of hot and cold sheets are being pushed as hard as ever for tonnage. Demand is well in excess of supply, and producers anticipate no difficulty in maintaining high operations over remainder of the year.

Any appreciable slowing up in the automotive industry would likely take the edge off, but some leading producers believe that any decline that might reasonably be expected in the automotive field this fall would not greatly disturb operations.

Philadelphia—District sheet sellers report a stepping up in demand from manufacturers of agricultural machinery and air-conditioning equipment whose particular seasonal activities get under way in the fourth quarter and extend through the first quarter of next year.

Along with hot and cold-rolled sheets, galvanized sheets are receiving a boost as a result.

Potentialities of the air-conditioning field are becoming increasingly impressive.

Household appliance requirements are still holding up well, as reflected not only in demand for hot and cold carbon sheets and enameling stock, but electrical sheets as well.

Pittsburgh—No sign of supply-demand balance in sheets is seen until late in fourth quarter with demand continuing strong. Inquiries still come from this area to out-of-town manufacturers' representatives.

Among automakers only small manufacturers are cutting orders, by limited amounts. No letup is noted among the bulk of auto and appliance interests. Sales of stainless steel to automakers are good.

Cleveland — Sheetmakers in this general area have not yet noted any sign of slackening demand from the automotive industry. They are booked full for the current quarter and the indicated carryover into fourth quarter limits new bookings for that period. Most consumers still are pressing for more tonnage for last quarter than has been allotted them. From this, the mills are confident that any openings that appear in schedules as result of cancellations will be quickly filled by currently unsatisfied demand.

Youngstown—There are few telltale clouds appearing yet to forecast any substantial letdown in the steel business here. Company executives, however, are keeping a sharp eye for signs, especially from the automotive industry, which would indicate a coming letdown in activity. Currently, local plants are turning out record tonnages and orders are continuing to be booked actively.

Cincinnati—Vacations have eased the immediate demand for sheets. This is only temporary as August pick-up is expected to put sheets right back in the "much wanted" bracket. Mills continue to anticipate a well filled fourth quarter.

Chicago — Although sheetmakers report almost no cancellations or directions to hold back on shipments for either third or fourth quarters and most consumers still want more tonnage than their quotas allow

Steel Output Heading For New Record

July production hits new high for that month, sixth this year in which output topped 9 million net tons. Seven months' total largest for any comparable period

New York—Steel production in July of 9,284,000 net tons reached a record high for that month, the American Iron & Steel Institute reports. Output was down somewhat from June when production totaled 9,404,479 net tons, but it was considerably above that in July last year when the steel strike held output to only 1,627,446 net tons.

Output of 67,229,936 net tons in the first seven months this year also was the largest tonnage ever poured by the nation's furnaces in a comparable period.

Also, July was the sixth month this year in which production exceeded 9 million net tons. In March output rose above 10 million net tons for the first time in history.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated	No. of
		% of capac-		% of capac-		% of capac-		% of capac-	weekly production	weeks in
1953	Net tons	ity	Net tons	ity	Net tons	ity	Net tons	ity	(net tons)	mos.
January	8,841,679	101.4	350,000	88.9	706,083	81.2	9,897,962	99.1	2,234,303	4.43
February	7,939,299	100.8	329,389	92.6	664,091	84.6	8,932,779	99.1	2,233,195	4.00
March	9,050,773	103.7	354,710	90.0	762,615	87.7	10,168,098	101.8	2,295,282	4.43
1st Qtr.	25,831,751	102.0	1,034,299	90.4	2,132,789	84.5	28,998,839	100.0	2,254,964	12.86
April	8,493,909	100.5	334,605	87.7	717,024	85.2	9,545,538	98.7	2,225,067	4.29
May	8,925,163	102.3	354,577	90.0	717,340	82.5	9,997,080	100.1	2,256,677	4.43
*June	8,394,502	99.4	332,060	87.0	677,917	80.5	9,404,479	97.2	2,192,186	4.29
*2nd Qtr.	25,813,574	100.8	1,021,242	88.3	2,112,281	82.7	28,947,097	98.7	2,224,988	13.01
*1st 6 Mo.	51,645,325	101.4	2,055,541	89.3	4,245,070	83.6	57,945,936	99.4	2,239,889	25.87
†July	8,309,000	95.5	324,000	82.4	651,000	75.0	9,284,000	93.2	2,100,000	4.42
1952										
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,824,524	89.1	27,200,724	100.7	2,092,363	13.00
April	7,101,199	91.1	323,006	73.2	567,935	84.1	7,992,140	89.7	1,862,970	4.29
May	7,291,865	90.6	318,642	69.9	595,135	85.3	8,205,642	89.2	1,852,289	4.43
June	1,446,927	18.6	22,862	5.2	170,000	25.2	1,639,789	18.4	382,235	4.29
2nd Qtr.	15,839,991	67.0	664,510	49.6	1,333,070	65.1	17,837,571	66.0	1,371,066	13.01
1st 6 Mo.	40,047,320	84.8	1,833,381	68.5	3,157,594	77.1	45,038,295	83.4	1,731,576	26.01
July	1,347,587	16.8	2,000	0.4	277,859	39.9	1,627,446	17.7	368,200	4.42

Note—The percentages of capacity in 1953 are calculated on weekly capacities of 1,969,275 net tons open-hearth, 88,934 net tons bessemer and 196,250 net tons electric ingots and steel for castings, total 2,254,459 net tons; based on annual capacities as of Jan. 1, 1953, as follows: Open-hearth 102,677,980 net tons, bessemer 4,637,000 net tons, electric 10,232,490 net tons, total 117,547,470 net tons. The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings, total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons.

*Revised.
†Preliminary figures, subject to revision.

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them, the feeling persists that there will be a noticeable easing late this year.

The situation hinges entirely on the pace which automobile manufacture sets. Even with lower car assembly, demands upon sheetmakers is expected to hold strong.

St. Louis—Sheet demand holds steady and high but there are clouds on the horizon. Mills report the market firm for hot-rolled, but cancellations have been cropping up in cold-rolled, mostly from refrigerator, freezer, washing machine and stove manufacturers. So far cancelled tonnage has been taken up but mills foresee a test period ahead.

Birmingham—Sheets are in steady demand. Production continues behind regional needs. Some miscellaneous new industries are in prospect for the district if and when sheet supply improves.

San Francisco—Sheets, both hot-rolled and cold-rolled, are among the most sought after items. Galvanized sheets are in adequate supply.

Steel Bars . . .

Bar Prices, Page 184

Pittsburgh—Some easing is taking place in alloy bars, with automakers not buying so far in advance as before. Conversion orders are dropping here. Bar producers generally expect a good fourth quarter, although it is too early to make definite predictions.

Cleveland—The bar mills appear to be under somewhat less demand pressure but this is attributable largely to seasonal factors, such as vacation curtailment of manufacturing operations. Expectations are pressure going into fourth quarter will be as strong as ever unless military cutbacks are experienced over coming weeks.

Boston—Buying of aircraft quality steel has slackened for inventory correction, although this grade may now be sold for commercial applications. Bar requirements for automobile crankshafts hold up with trend toward carbon from alloy. Transmission chain volume is off with backlogs lower.

While hot-rolled carbon bars are sold through this year, cold-finished bars are not as active with openings in November schedules. Converters are operating 85 to 90 per cent of capacity and are building inventory.

New York—While hot carbon bar supply is falling well short of immediate requirements, some bar sellers believe that by late in the year supply and demand will be in fair balance. There is not the pressure for future tonnage that has prevailed over recent months.

Philadelphia—Agricultural equi

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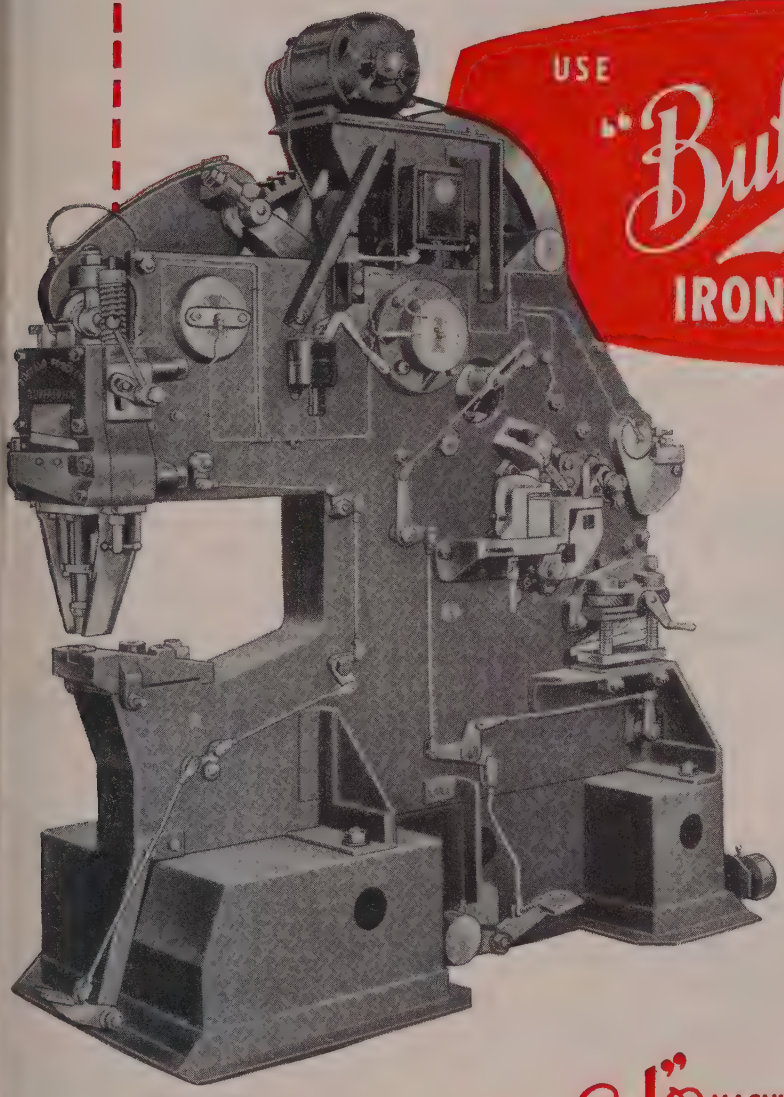

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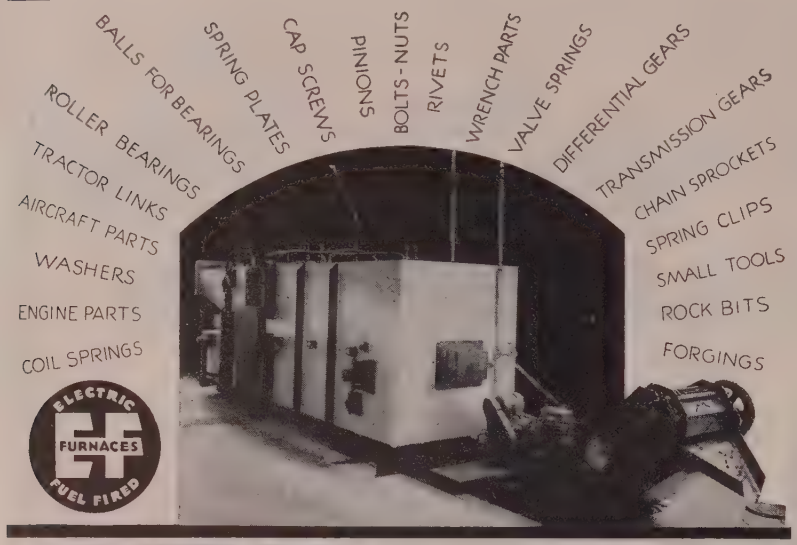

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ment manufacturers, whose major period of activity begins in the fourth quarter and extends through the following first quarter in anticipation of spring sales, are now making their imprint on the bar market. They are specifying actively in the smaller sizes.

Cincinnati—It appears that alloy bars have undergone some inventory improvement recently. At least they are a bit easier to obtain than formerly.

Chicago—Steel bars aren't quite so strong in demand as recently although no single consuming area can be termed responsible. It is generally known that farm equipment and household appliance output has dropped but the contraction in demand is on a broader base.

Los Angeles—Cold drawers' order books, closed through October, filled slowly. Activity of cold-finishers is 20 to 25 per cent reduced from the January level, and 30 per cent less than a year ago.

Tin Plate . . .

Tin Plate Prices, Page 186

San Francisco—Tin plate continues in good demand. Packing industry demands are heavy, but new facilities of mills have just about made the area self sufficient in supplying needs.

Plates . . .

Plate Prices, Page 184

Philadelphia—While plate consumers are less disposed to pay high premiums and have been laying off conversion deals in noticeable degree they are still finding it necessary to pay above the general market for a certain percentage of their tonnage.

Their requirements still are heavy except notably for ship work, and supply has been tightened by shrinking production of strip-plate.

Producers at general market price levels have little difficulty obtaining as much fourth quarter tonnage as they care to accept.

Boston—Plate fabricating shops are placing orders for November and are able to specify tonnage closer to needs, including medium and heavier gages. No difficulty is anticipated in filling schedules.

New York—Tank fabricators are booked far ahead, with operations retarded to some extent by inability to obtain plates in quantities desired. Fabricators of large water tanks report some easing in demand.

Pittsburgh—Mills are operating near capacity, but fabricators can get enough plates or structural shapes. Construction companies and fabricators buying from warehouses say stocks are slightly better than they were last month.

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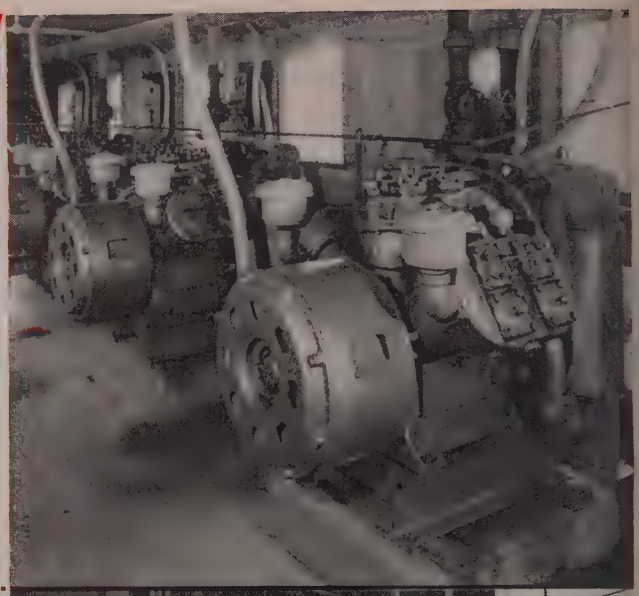

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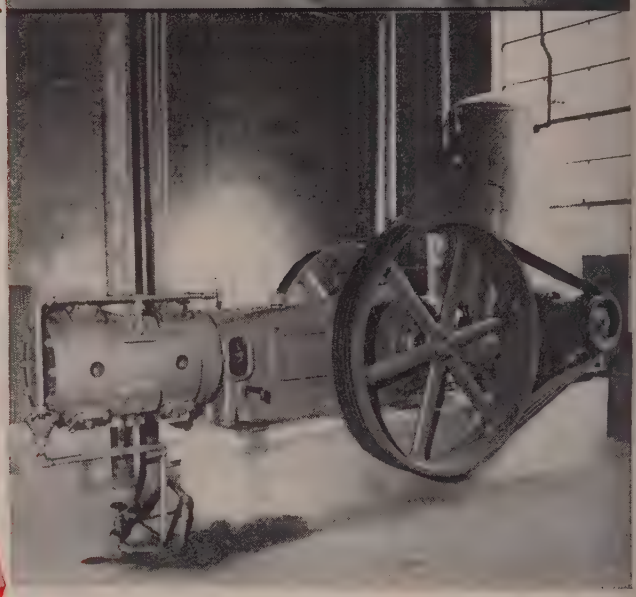

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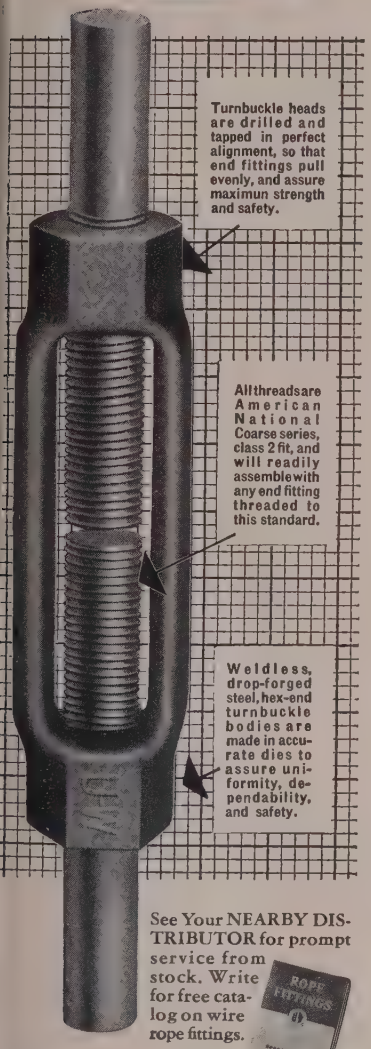
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Structural Shapes . . .

Structural Shape Prices, Page 184

Boston—Production of structurals is expected to approximate 200,000 tons per month when rehabilitation work is completed at the Bethlehem, Pa., mills. This is many months away, but eventually the stringency in wide flanged structurals will be relieved.

Meanwhile, less fabricated work is being figured in this area with district shops carrying a backlog averaging three months.

New York — District structural awards are featured by the placing of 9185 tons for a Ford assembly plant at Mahwah, N. J., with the Bethlehem Steel Co., Bethlehem, Pa. Buying is comprised largely of bridge work.

Philadelphia — The trend in the structural market is a bit mixed. Some of the larger fabricators report less backlog than three months ago. Certain others see little change and report delivery promises are more extended, if anything.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 184

Portland, Oreg.—Oregon Steel Mills is operating at full capacity. Some new equipment has been added and 1953 output will show an increase with a total of about 110,000 tons. Among large contracts on this firm's books is one for 33,000 tons of reinforcing for The Dalles dam and powerhouse, deliveries of which will extend over 36 months.

The Steel Construction of Oregon, working jointly with Rutherford & Skoubye, Oakland, Calif., is active in the reinforcing field, being prime contractors for steel for the Dalles dam, over 12,000 tons for the Hanford works, and 4500 tons for the Albeni Falls powerhouse, in addition to substantial tonnages for other projects in this area.

Reinforcing jobbers report a fair run of business this year, but it is spotty, and under last year's totals for the same period. Generally, backlogs are in advance of stocks, consisting largely of public works requirements. Construction continues active in the Oregon country.

Wire . . .

Wire Prices, Page 186

Boston—Wire volume is leveling off at a slower rate for fourth quarter and October schedules are not filled. Business is more competitive at the mill level. Automobile consumers are placing less forward tonnage and there have been cancellations in this and other directions.

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BOYS, THOSE CHAMPION GRAY DEVIL No.2 ELECTRODES DID THE TRICK! PRODUCTION IN OTHER DEPARTMENTS MUST INCREASE JUST TO KEEP THE WELDING DEPARTMENT ROLLING!
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Reasons given include both high inventory and a decline in requirements.

Buffalo—Production of high carbon spring wire will be raised about 12,000 tons annually at the local plant of the Wickwire Spencer Steel Division, Colorado Fuel & Iron Corp., through installation of new machinery and equipment.

Birmingham—Wire production has fallen to the lowest point in months. Most items are in abundant supply. Reports of infiltration of foreign wire, mostly from West Germany and Belgium, are confirmed.

Tubular Goods . . .

Tubular Goods Prices, Page 187

Cleveland—Republic Steel Corp. recently announced its entry into the production of oil country seamless casing and tubing. Material now is available from a new seamless tube mill at South Chicago, construction of which was started in February, 1951.

Boston—Distributors of buttweld pipe are not taking all the tonnage offered them for October. This follows cutbacks of 30 per cent in September. Buttweld inventories are in balance and some distributors are also cutting back their take of pressure tubing for October.

Direct shipments of mechanical tubing are off, partly due to slow buying by builders of textile mill equipment, although two are reported to have booked heavier orders.

Iron Ore . . .

Iron Ore Prices, Page 207

Cleveland—Iron ore continues to move from the head of the Great Lakes in record-breaking volume. Shipments in the week ended Aug. 10 totaled 3,436,761 gross tons, according to the Lake Superior Iron Ore Association. This was the greatest tonnage ever moved in one week, exceeding the previous record established in the week ended Sept. 8, 1952, by 52,280 tons.

Cumulative shipments in the 1953 season to date now stand at 55,082,502 tons, comparing with 27,629,043 tons in the like period of the 1952 shipping season. With some four months of lake navigation remaining shippers now anticipate moving 105 million tons in the 1953 season for an all-time record.

In July, the Great Lakes fleet hauled the greatest tonnage of iron ore in any month on record, 14,496,711 gross tons. At the same time July coal shipments held up well, amounting to 5,596,688 net tons, and a drop in lake grain shipments in the month to 1,690,686 net tons was less than had been expected.

Advertisement

A Report from Vanadium Corporation

How Vanadium Corporation's long-range expansion program is helping industry.

CHROMIUM ALLOYS

Vanadium Corporation's new plant at Graham, West Virginia, has been especially equipped to produce—by a unique new process—a remarkably clean, dense new *low carbon ferrochromium.* This new alloy combines a normal silicon content with a high chromium-to-carbon ratio which enables the steelmaker to produce stainless steels of extremely low carbon content without resorting to modification of furnace and melting practices.

The new Graham plant also produces various alloys of *ferrochrome-silicon.* Additional modern facilities at Niagara Falls are producing increased quantities of *high-carbon ferrochromium* by Vanadium's exclusive process. There is an ever growing demand for these clean, high-density Vancoram Alloys—particularly in the many applications where quality and economy are primary considerations.

GRAINAL ALLOYS

These are the multiple-element alloys developed by Vanadium Corporation that are now being used to produce annually over *a million tons of boron steels.* Replacing critical and more costly elements with respect to hardenability and other properties, Grainal Alloys have proved invaluable not only in times of heavy defense production but also in providing low-cost, high-quality alloy steels for our peacetime economy.

New use for Grainal Alloys: alleviating the problem of hot shortness in *stainless steels.* Field reports indicate that small additions of Grainal improve the hot working characteristics of stainless, thus cutting conditioning costs and increasing output.

Anticipating the future demand for Grainal Alloys, Vanadium Corporation has included at its new plant at Cambridge, Ohio, additional facilities for their production.

VANADIUM ALLOYS

With government restrictions on the use of vanadium now lifted, steelmakers can once again take full advantage of Vancoram *ferrovanadium.* Small additions of this versatile, economical alloy often do the work of large amounts of other, more expensive alloys—*a little goes a long way.*

Vanadium Corporation has played an important role in helping to make vanadium again available in large commercial quantities.

For example . . .

New VCA mines in Colorado have substantially increased the production of *vanadium ore* in conjunction with western uranium operations.

Complete new facilities at the Cambridge, Ohio, plant will soon be in full operation to further insure a plentiful supply of highest quality ferrovanadium for every application—from watch springs to giant forgings.

More news about Vancoram Ferrovanadium: Available for many years both in bags and drums, ferrovanadium can now be furnished palletized for greater shipping economy and ease of handling.

SILICON METAL AND ALLOYS

Among the promising new nonmetallic materials developed during World War II are the Silicone plastics. Their outstanding properties include resistance to both high and low temperatures—thanks to *silicon metal* used in their manufacture.

Vanadium Corporation's new Graham plant provides the plastics industry with a dependable new source of silicon metal of highest quality.

The new Graham plant is also furnishing a complete range of silicon metal and *ferrosilicon* to the aluminum, iron, steel, magnesium and other industries.

RESEARCH

Now nearing completion at the Cambridge plant is the new enlarged Research Center. This new center contains extensive, modern facilities for the further development of all Vancoram products—which also include, *titanium alloys, master aluminum alloys,* and a complete range of *foundry alloys* for every application.

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Semifinished Steel . . .

Semifinished Prices, Page 184

San Francisco—No perceptible alteration in steel mill operations in this area is expected through remainder of this year. From an overall standpoint supplies still fall short of demand. This deficiency likely will continue for some time.

A cutback in military needs would have little effect on local mill operations. Mills could easily use released tonnage to fill civilian customers' needs. Military allocations are only a small part of the steel plants' production and as the products parallel those of civilian customers it would be an easy matter to turn the released tonnage into civilian channels.

Pig Iron . . .

Pig Iron Prices, Page 188

Chicago—Most foundry vacations have been concluded and in general operations are close to the June rate. Agricultural implement and tractor lines are off considerably but strong automotive output is holding the melting rate up.

Pig iron supply is matching demand fairly well with all metal available moving to users.

Boston—Pig iron shipments are up slightly due largely to correction in inventories. Some shops have placed little or no tonnage since June, but are now balancing inventories.

New York—Although district foundries are operating a little better, as more and more get their vacation periods behind them, they are still specifying for pig iron slowly. Most sellers of iron anticipate little important improvement before fall.

Buffalo—The merchant pig iron trade is hoping that any current recession in buying is due to vacation slackness rather than a falling off in general business. At least 75 to 80 per cent of current iron output is going into ingot production.

Philadelphia—Demand for foundry pig iron lags with domestic producers feeling the adverse effects of not only a seasonal let-up in consumption, but of increasing competition from foreign sellers.

Pittsburgh—Great Lakes Steel Corp., unit of National Steel Corp., Pittsburgh, contracted with Koppers Co. Inc. for rebuilding and enlarging one blast furnace out of four at its Zug Island plant near Detroit.

Cleveland—Merchant iron sellers are seeking business more aggressively than for a long time past. Piling of iron at furnaces is at a minimum but demand from the foundries is not as pressing as it was in the spring. This partly reflects seasonal influences, largely vacation curtailments and suspensions.

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Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.

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Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

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Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

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More Coke Facilities Being Added

Industry completing expansion program curbed by last year's steel strike. Capacity of slot-type ovens at beginning of 1953 was 76,428,000 net tons

Washington—Substantial additions to coke-making facilities are being installed, much of the new capacity being that delayed in construction by last year's steel strike, according to the Bureau of Mines.

At the beginning of 1953, the Bureau reports, 1075 ovens with capacity of 5,983,600 net tons, were under construction. In 1952, despite the strike difficulties, 947 new ovens with annual capacity of 5,317,400 net tons were completed.

All of last year's installations, however, did not represent additional capacity since a large number of the ovens were replacements of old facilities previously dismantled. Nevertheless, while 658 ovens with annual capacity of 2,945,000 net tons were taken out of production either for rebuilding or permanent retirement last year, the industry did achieve a net gain of 289 ovens.

At the end of 1952 there were 15,608 slot-type ovens in place with potential coke capacity of 76,428,000 net tons. At the same time the total number of beehive ovens at the end of the year was 17,551 with annual capacity of 12,004,800 tons. Only 14,797 beehive ovens with capacity of 10,304,400 tons, however, were reported in operable condition.

Production of oven and beehive coke last year decreased 14 per cent from the record set in 1951, totaling 68,254,109 net tons. As coke production is geared to steel production, the long steel strike cut output sharply. Slot-type coke oven operations averaged 84 per cent of capacity, keeping step with average blast furnace operations of 84.2 per cent.

COMPARATIVE COKE DATA—1937 AND 1951-52

(Net Tons)

	1952	1951	1937
Coke produced:			
Oven	63,850,115	71,987,172	49,210,748
Beehive	4,403,994	7,343,530	3,164,721
Total	68,254,109	79,330,702	52,375,469
Exports, all coke	792,072	1,026,730	526,683
Imports, all coke	312,519	161,639	286,364
Disposal all coke sold or used:			
Blas: furnace	58,182,747	67,440,987	36,751,969
Foundry	3,102,446	3,805,686	2,038,822
Other industrial	4,648,077	5,603,262	4,597,894
Domestic	1,932,369	2,087,934	8,107,518
Producers' stocks	1,901,657	1,482,972	2,595,287

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Metallurgical Coke . . .

Metallurgical Coke Prices, Page 207

Cleveland — Vacation interruptions at foundries throughout this area are reflected in continued sluggish demand for oven foundry coke. Some piling of coke at ovens is reported but sellers anticipate a pickup in demand over coming weeks, especially after Labor Day, to reduce accumulations appreciably.

Scrap . . .

Scrap Prices, Page 210

Philadelphia—Certain of the prime grades of open-hearth scrap are about $1 per ton easier. No. 1 heavy melting, No. 1 bundles and No. 1 busheling are now holding at $43 to $44 delivered consumer plant. No. 2 heavy melting also is off about $1 to $38 to $39.

All other steel grades, including No. 2 bundles, low phos scrap and borings and turnings are steady.

In the cast grades there is a slight easing in heavy breakable cast to a spread of $42 to $43 delivered.

Easiness in steel scrap reflects better inventories at mills generally.

Pittsburgh—Price changes do not reflect strong demand for scrap which moves slowly here. Prices of No. 1 heavy melting and No. 1 bundles advanced to equalize prices in neighboring areas. When a local manufacturer cut purchases of No. 2 heavy melting and No. 2 bundles those prices dropped.

New York — Steel scrap brokers have dropped prices in expectation of a lower consumer market in September. Following a rise in prices in July, considerable steel scrap has been moving with most mills having comfortable inventories. Brokers are now offering $35 for No. 1 heavy melting, $30 to $31 for No. 2 heavy melting, $28 to $29 for No. 2 bundles, $18 to $19 for machine shop turnings, $38 to $39 for low phos, and $22 to $23 for shovel turnings.

Cleveland—The scrap market is tending toward the weak side on the steelmaking grades following the re-

(*Please Turn to Page* 208)

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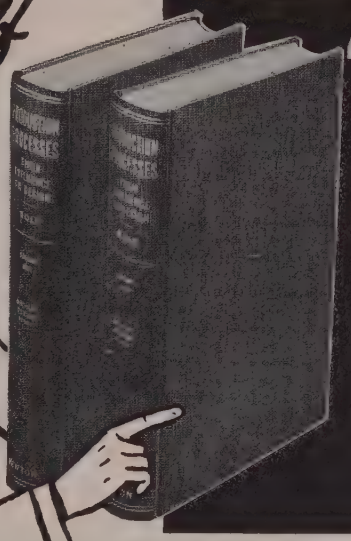

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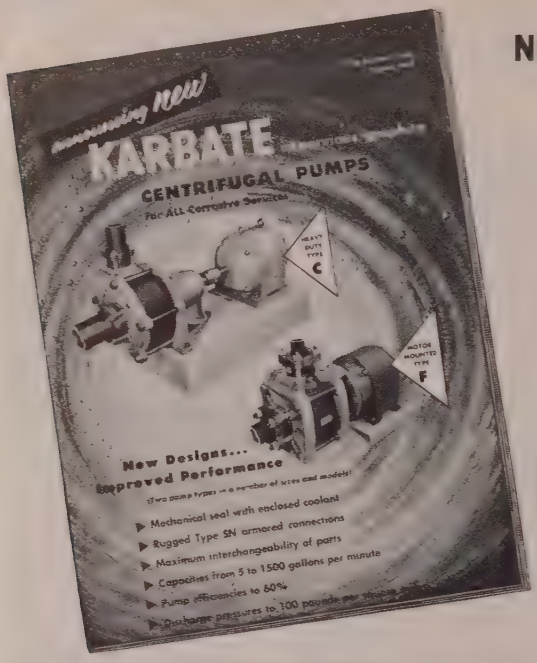
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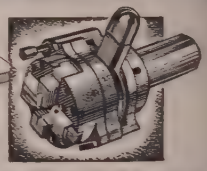

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...Heisen: (19-21% Mn, 1-3% Si). Carlot ...ross ton $86, Palmerton, Pa.; $85, Pitts... and Chicago; (16% to 19% Mn) $84 per ...Chicago, Pittsburgh, Palmerton, Pa.

...dard Ferromanganese: (Mn 74-76%, C 7% ...x.) Base price per net ton $200, Etna, ...ton and Sheridan, Pa.; add or subtract $2. for each 1% or fraction thereof of con... manganese over 76% or under 74%, ...ctively.

...76-80%) 13.15c per pound of contained ...f.o.b. Alloy, W. Va.; Ashtabula, Marietta, ...Sheffield, Ala.; and Portland, Oreg.

...79-81%) Lump, $208 per net ton, f.o.b. ...onda or Great Falls, Mont. Add $2.60 for ... 1% above 81%; subtract $2.60 for each ... below 79%, fractions in proportion to ...est 0.1%.

...-Carbon Ferromanganese, Regular Grade: ...85-90%). Carload, lump, bulk, max. ...% C, 27.95c per lb of contained Mn, car... packed 28.7c, ton lots 29.8c, less ton ...c. Delivered. Deduct 0.5c for max, 0.15% C ...ade from above prices, 1c for max, 0.30% C ...5c for max 0.50% C, and 4.5c for max 7% C—max 7% Si. **Special Grade:** (Mn ... min, C 0.07% max, P 0.06% max). ... 2.05c to the above prices. Spot, add 0.25c.

...ium-Carbon Ferromanganese: (Mn 80-85%, ...5% max). Carload, lump, bulk 21.35c per ...f contained Mn, carload packed 22.1c, ton ... 23.2c, less ton 24.4c. Delivered. Spot, ... 0.25c.

...ganese metal, 2" x D (Mn 95.5% min, Fe ... max, Si 1% max, C 0.2% max): Car... lump, bulk, 36.2c per lb of metal; ...ced, 36.95c; ton lot 38.45c; less ton lots ...5c. Delivered. Spot, add 2c.

...tromanganese: Carload, 31.5c; ton lots ...c; 250 to 1999 lb, 35.5c. Premium for hy...gen-removed metal, 1.5c per pound, f.o.b. ... Knoxville, Tenn. Freight allowed to St. ...is or to any point east of Mississippi.

...omanganese: (Mn 65-68%). Contract, lump, ...s, 1.50% C grade, 18-20% Si, 11.4c ... lb of alloy, carload packed, 12.15c, ton lots ...05c, less ton 14.05c. Freight allowed. For ... C grade, Si 15-17%, deduct 0.2c from ...ve prices. For 3% C grade, Si 12-14.5%, ...uct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

...rotitanium, Low-Carbon: (Ti 20-25%, Al ...% max, Si 4% max, C 0.10% max). ...ntract, ton lots 2" x D, $1.50 per lb of ...ntained Ti; less ton $1.55. (Ti 38-43%, Al ... max, Si 4% max, C 0.10% max). Ton ...s $1.35, less ton $1.37, f.o.b. Niagara Falls, ...Y., freight allowed to St. Louis. Spot ...d 5c.

...rotitanium, High-Carbon: (Ti 15-18%, C ...8%). Contract $177 per net ton, f.o.b. Ni...ara Falls, N. Y., freight allowed to destina...ns east of Mississippi river and north of ...altimore and St. Louis.

...rotitanium, Medium-Carbon: (Ti 17-21%, C ...4.5%.) Contract $195 per ton, f.o.b. Ni...ara Falls, N. Y., freight not exceeding St. ...uis rate allowed.

CHROMIUM ALLOYS

...igh-Carbon Ferrochrome: Contract, c.l., lump, ...ulk 24.75c per lb of contained Cr; c.l., packed ...5.65c, ton lot 26.80c, less ton 28.20c. Deliv...ed. Spot, add 0.25c.

...ow-Carbon Ferrochrome: (Cr 67-72%) Con...act, carload, lump, bulk, max, 0.025c C ...simplex) 34.50c per lb contained Cr, 0.03% C ...6.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% ... 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, ...50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, ...% C 32.75c. Carload packed add 1.1c, ton ...ot 2.2c, less ton add 3.9c. Delivered. Spot, ...dd 0.25c.

...oundry Ferrochrome, High Carbon: (Cr 62-...6%, C 5-7%) Contract, c.l. 8 M x D, bulk, ...6.25c per lb of contained Cr C.l., packed ...7.15c, ton 28.50c, less ton 30.25c. Delivered. ...Spot, add 0.25c.

...oundry Ferrochrome, Low Carbon: (Cr 50-...4%, Si 28-32%, C 1.25% max.) Contract, ...carload, packed, 8 M x D, 18.35c per lb of ...alloy; ton lot 19.2c; less ton lot, 20.4c, deliv...ered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon: 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained chrome plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D; packed, max 0.50%, carload $1.12, ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.10. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.20

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c. smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%; Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-19%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb. f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3% lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 10,000 lb W or more, **$4.35 per lb of contained W; 2000 lb W to 10,000 lb W, $4.45; less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.**

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max. C 0.4% max). Contract, ton lot, 2" x D, $6.40 per lb of contained Cb, less ton $6.45. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx. Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Sigio, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

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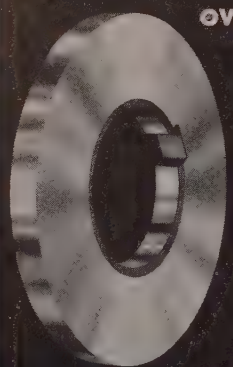

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ORES—COKE—REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

ORES

Lake Superior Iron Ore

ices effective July 1, 1953, and thereafter; ss ton, 51.50% iron natural, rail of vessel, er lake ports.)

range bessemer	$10.30
range nonbessemer	10.10
sabi bessemer	10.05
sabi nonbessemer	9.90
en-hearth lump	11.15
gh phosphorus	9.90

e foregoing prices are based on upper lake l freight rates, lake vessel freight rates, ndling and unloading charges, and taxes reon which were in effect on June 24, 53, and increases or decreases after such te are for buyer's account.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

oundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

vedish basic, 60 to 68%: Spot	nom.
Long-term contract	22.00
orth African hematites (spot)	24.00-26.00
razilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

oreign wolframite and scheelite, per net ton unit	$55.00
omestic scheelite, mine	63.00

Manganese Ore

anganese, 48% nearby, $1.18-1.21 per long n unit, c.i.f. U. S. ports, duty for buyer's ccount; shipments against old contracts for 8% ore are being received from some sources t 90-93c.

Chrome Ore

ross ton, f.o.b. cars, New York, Philadelhia, Baltimore, Charleston, S. C., plus ocean reight differential for delivery to Portland, reg., or Tacoma, Wash.

Indian and African

8% 2.8:1	$40.00-$42.00
8% 3:1	44.00-46.00
8% no ratio	32.00-34.00

South African Transvaal

4% no ratio	$27.00-28.00
8% no ratio	34.00-35.00

Brazilian

4% 2.5:1 lump	nom. $32

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109.00; Salina, Pa., $114.00; Niles, O., $109; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115.00; Hays, Pa., $120.00; Niles, O., $107; E. Chicago, Ind., Joliet, Rockdale, Ill., $125.00; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $197.50; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109.00; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140.00; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.00.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174.00; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $179.00; Danville, Ill., $169.30.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $255.00; Danville, Ill., $258.00; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Narlo, Millersville, Martin, Gibsonburg, Woodville, O., $13.75; Thornton, McCook, Ill., $13.85; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00
New River foundry	20.80
Wise county foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.00
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44-45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 (carlots, nonreturnable drums)	17.25

FLUORSPAR

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38. Imported, net ton, duty paid, metallurgical grade, $35-$36.

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Inches Diam.	Length	Cents per lb
GRAPHITE		
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95
CARBON		
35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

MANUAL LINCOLNWELD SIMPLIFIES PRODUCTION CUTS COSTS

BY utilizing the benefits of hidden-arc welding with the Manual Lincolnweld, fewer man hours are now required to fabricate this company's products. Shop setups are simpler. Welds are uniform, dependable in quality. Costs are substantially less than with hand methods.

These air reservoirs for Magor Car Corporation's dump cars are fabricated from ¼" steel plate and 5/16" heads. The shell is butt welded in one pass from the inside. Heads are butt welded to the shell in two passes using a backing bar.

To simplify and save setup time, the welding gun of the Manual Lincolnweld is mounted in a motorized gas cutting carriage for the longitudinal seam. (Fig. 1) For the circumferential weld, the entire carriage is elevated into position (Fig. 2) and the reservoir simply rotated beneath the welding gun using power rolls.

With Manual Lincolnweld, a continuous electrode is fed automatically to weld beneath a layer of granular flux that is deposited by the welding gun. High currents, up to 600 amps concentrated on a 5/64" electrode, eliminate the need for most joint preparation on plates up to ¾". The welds are practically self cleaning to cut finishing time.

Fig. 1. One Pass *of Manual Lincolnweld completes buttweld. Electrode is fed automatically to weld beneath a layer of granular flux eliminating arc rays. Photo courtesy of Magor Car Corp., Clifton, N. J.*

Fig. 2. Saves Setup. *Welding gun of Manual Lincolnweld is elevated in position with simple fixture. Welds are pressure tested to 125psi, and found free of porosity.*

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Advertisement

Scrap . . .

(*Concluded from Page 202*)

cent summer display of strength. Last week No. 1 heavy melting steel, No. 1 bundles and No. 1 busheling dropped about $1 per ton on small tonnage sales here for delivery to Valley mills. Otherwise, the market was virtually inactive with dealers shipping out tonnage against old orders as quickly as possible.

The steel mills are holding comfortable inventories, having taken in a substantial tonnage over recent weeks. As a result, dealers anticipate some weakening in prices unless mill buying is resumed quickly.

Youngstown — A pronounced feature of the steel market here has been the adequacy of scrap supply. Unlike other recent years, there's no big rush to build inventories for winter. In fact, some mills aren't even buying enough for normal requirements. Consumers are getting the best quality scrap.

Cincinnati—The market generally has been showing weakness which runs through all grades. Random length rails, the only price change, dropped $1.

Chicago—Chief feature of the scrap market here is the softening in price of No. 2 bundles because of general lack of demand in this item by important consumers. The price is off from $1 to $2 a ton. Other grades have indicated stability.

St. Louis — Scrap market has strengthened moderately after nearly six months' weakness, due mostly to a pickup in outside buying. Local purchases of steel grades are small while cast demand continues nil.

Birmingham—The district's scrap market remains soft. Prices remain unchanged. Most of the heavy melting steel is accounted for by shipments out of the district.

Rails, Cars . . .

Track Material Prices, Page 187

San Francisco — Western Pacific railroad has ordered 10 cushion-underframe box cars at $7500 each. The cars, a joint development of Western Pacific and Pullman-Standard Car Co., have their bodies connected with their underframes through movable shock-absorbing devices instead of through rigid fastenings. Their floating action minimizes damage to cargoes due to high coupling speed, road shock and slack action on long trains.

New York—The New York Central railroad has closed on ten all-welded steel deck scows and nine all-welded steel covered freight barges to Bethlehem Steel Co., Bethlehem, Pa.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 187

Cleveland — Industrial fastener manufacturers are effecting new list prices on all types and sizes of nuts. At the same time they are putting into effect new consolidated discounts on nuts, thus simplifying their published schedules.

The new list prices, the first in over a quarter century, were initiated in July by an eastern producer. They result in lower prices on some small nuts and advances on certain of the larger sizes, reflecting changes in production practice and being based more realistically on costs.

Canada . . .

Hamilton, Ont.—Canadian steel production in excess of 4 million tons is forecast for this year by H. G. Hilton, president, Steel Co. of Canada Ltd. In 1952 production made the all-time record of 3,720,000 tons, while in 1939 production was only 1,410,000 tons. Rapid production growth reflects the big increase in Canada's steelmaking capacity.

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STRUCTURAL SHAPES . . .

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tons, state viaduct, Buffalo, through & Rogers, Chicago, to Bethlehem Co., Bethlehem, Pa.

tons, assembly plant, Ford Motor Co., wah, N. J., to Bethlehem Steel Co., lehem, Pa.

ons, No. 2 engine plant, Cleveland, Ford or Co., to R. C. Mahon Co., Detroit.

ons, addition, Red Lion plant, Budd Co., adelphia, to the Belmont Iron Works, ystone, Pa.

tons, Shavertown bridge, Delaware coun- New York, through Cuyoga Foundation o. to Bethlehem Steel Co., Bethlehem,

ons, overpass, 96th street at Roosevelt ve, New York, through Mascali & Sons ., general contractor, to Bethlehem Steel Co., Bethlehem, Pa.

540 tons, plant, United States Envelope Co., Metuchen, N. J., through John W. Ryan Construction Co., Inc. to Bethlehem Fabricators, Bethlehem, Pa.

500 tons, Oregon state Coos Bay bridge, to Poole, McGonigle & Dick, Portland, Oreg.

325 tons, addition, Greenbriar Hotel, White Sulphur Springs, W. Va., through John W. Harris Associates, Inc., to Ingalls Iron Works Co., Birmingham, Ala.

315 tons, Vernon Ave. bridge approach, New York city, through Horn Construction Co. to Bethlehem Steel Co., Bethlehem, Pa.

245 tons, plant, United States Rubber Co., Santa Ana, Calif., to Bethlehem Steel Co., Bethlehem, Pa.

225 tons, approaches, Hunt's Falls bridge, Lowell, Mass., to Phoenix Bridge Co., Phoenixville, Pa., through Coleman Bros. Corp., Boston, general contractor.

220 tons, state bridge, Bucks county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa.

160 tons, building, Sears, Roebuck & Co., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, store, W. T. Grant Co., Peoria, Ill., to Ingalls Iron Works Co., Birmingham, Ala.

150 tons, Long Rock Oregon state bridge, to Poole, McGonigle & Dick, Portland, Oreg.

150 tons, Rhineheart river Oregon state bridge, to Poole, McGonigle & Dick, Portland, Oreg.

130 tons, Apex Smelting Co., plant, Springfield, Oreg. to Poole, McGonigle & Dick, Portland, Oreg.

130 tons, Tiber dam, Montana, to Schmitt Steel Co., Portland, Oreg.

125 tons, Kress store building, Portland, Oreg., to Poole, McGonigle & Dick, Portland.

100 tons, Portland city overcrossing and miscellaneous, to Poole, McGonigle & Dick, Portland, Oreg.

STRUCTURAL STEEL PENDING

4,500 tons, state thruway bridge work, Ulster county, New York, John Arborio, Inc., and Corbetta Construction Co., Poughkeepsie, N. Y., low on combined bid.

2,700 tons, state hospital addition, Ward's Island, New York city, Lasker Goldman Co., that city, low on general contract.

1250 tons, Patterson-Riverside bridge, continuous girder, Great Miami river, Dayton, O.; bids Aug. 20.

225 tons, state bridge, West Springfield, Mass., Daniel O'Connell's Sons, Holyoke, Mass., low.

210 tons, hospital addition, Plattsburg, N. Y., Wright & Morrissey, low on general contract.

210 tons, state bridge, Schenectady county, New York, Tomilson Construction Co., Inc., Buffalo, low on general contract.

175 tons, bridge, Burlington, Mass., Campanella & Cardi Co., Hillsgrove, R. I., low.

REINFORCING BARS . . .

REINFORCING BARS PLACED

4500 tons, Albeni Falls dam, Washington state, to Steel Construction Co. of Oregon, Portland, Oreg.

100 tons, Glenn H. Bell substation, to Soule Steel Co., Portland, Oreg., by Bonneville Power Administration.

REINFORCING BARS PENDING

1075 tons, bridges, Ohio turnpike; bids Aug. 20, Columbus.

520 tons, steel sheet piling, Corps of Engineers, Mobile, Ala.; bids in.

210 tons, Patterson-Riverside bridge, Great Miami river, Dayton, O.; bids Aug. 20.

155 tons, trunk sewer, Washington, D. C.; bids Aug. 19, district government.

PLATES . . .

PLATES PLACED

3000 tons, steel liners Yale power dam, for Pacific Power & Light Co., Portland, Oreg., to American Pipe & Construction Co., Portland.

1200 tons, penstocks Palisades dam, Idaho, to American Pipe & Construction Co., Portland, Oreg.

450 tons, water pipe for Hillsboro, Oreg. to Beall Pipe & Tank Corp., Portland, Oreg.

300 tons, tanks for Ferndale, Wash., refinery,

(Please Turn to Page 212)

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Aug. 13	$44.17
Aug. 6	44.08
July avg.	43.51
Aug. 1952	43.00
Aug. 1948	43.33

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	*45.00-46.00*
No. 2 heavy melting	*42.00-43.00*
No. 1 bundles	*45.00-46.00*
No. 2 bundles	*40.00-41.00*
No. 1 busheling	44.00-45.00
Machine shop turnings	27.00-28.00
Mixed borings, turnings	30.00-31.00
Short shovel turnings	31.00-32.00
Cast iron borings	30.00-31.00
Cut structurals	48.00-49.00
Heavy turnings	41.00-42.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	48.00-49.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Charging box cast	42.00-43.00
Heavy breakable cast	40.00-41.00
Unstripped motor block	35.00-36.00
No. 1 machinery cast	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
Rails, 2-ft. and under.	53.00-54.00
Rails, 18-in. and under	54.00-55.00
Rails, random lengths	49.00-50.00
Rails specialties	51.50-52.50

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	*44.00-45.00*
No. 2 heavy melting	41.00-42.00
No. 1 bundles	*44.00-45.00*
No. 2 bundles	39.00-40.00
No. 1 busheligh	*44.00-45.00*
Machine shop turnings	24.00-25.00
Mixed borings, turnings	28.00-29.00
Short shovel turnings	28.00-29.00
Cast iron borings	28.00-29.00
Low phos.	46.00-47.00
Alloy free, short shovel turnings	31.00-32.00
Electric furnace bundles	45.00-46.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Charging box cast	44.00-45.00
Stove plate	43.00-44.00
Heavy breakable cast.	38.00-39.00
Unstripped motor blocks	27.00-28.00
Brake shoes	38.00-39.00
Clean auto cast	46.00-47.00
No. 1 wheels	40.00-41.00
Burnt cast	35.00-36.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
R. R. Malleable	50.00-51.00
Rails, 3-ft. and under.	52.00-53.00
Rails, 18 in. and under	55.50-56.50
Rails, random lengths.	48.50-49.50
Cast steel	50.00-51.00
Railroad specialties	52.00-53.00
Uncut tires	51.00-52.00
Angles, splice bars	53.00-54.00
Rails, rerolling	55.00-56.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	45.00-46.00
No. 2 heavy melting	42.00-43.00
No. 1 bundles	45.00-46.00
No. 2 bundles	40.00-41.00
Machine shop turnings	26.00-27.00
Short shovel turnings.	31.00-32.00
Cast iron borings	31.00-32.00
Low phos.	48.00-49.00
Electric furnace bundles	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	*38.00-39.00*
No. 1 bundles	*43.00-44.00*
No. 2 bundles	35.50-36.50
No. 1 busheling	*43.00-44.00*
Electric furnace bundles	44.50-45.50
Machine shop turnings.	28.00
Mixed borings, turnings	32.00
Short shovel turnings.	34.00
Structurals & Plate	46.00-47.00
Heavy turnings	42.00-43.00
Couplers, springs, wheels	50.00-51.00

Cast Iron Grades

No. 1 cupola	38.00-39.00
Charging box cast	40.00
Heavy breakable cast	*42.00-43.00*
Unstripped motor blocks	32.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting	*35.00*
No. 2 heavy melting	*30.00-31.00*
No. 1 bundles	*35.00*
No. 2 bundles	*28.00-29.00*
Machine shop turnings	*18.00-19.00*
Mixed borings, short turnings	22.00-23.00
Low phos. (structural & plate)	38.00-39.00
Short shovel turnings	*22.00-23.00*

Cast Iron Grades

No. 1 cupola	33.00-34.00
Unstripped motor blocks	25.00-26.00

DETROIT

No. 1 heavy melting	37.50-38.50
No. 2 heavy melting	33.00-34.00
No. 1 bundles	40.00-41.00
No. 2 bundles	*30.00-31.00*
No. 1 busheling	35.00-36.00
Machine shop turnings	*17.00-18.00*
Mixed borings, turnings	*19.00-20.00*
Short shovel turnings	*21.00-22.00*
Punchings & Plate scrap	39.00-40.00

Cast Iron Grades

No. 1 cupola	43.00
Changing box cast	34.00-35.00
Stove plate	34.00-35.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	42.00-43.00
Malleable	44.00

CINCINNATI

(Brokers' Buying Prices)

No. 1 Heavy melting	43.00
No. 2 heavy melting	40.00
No. 1 bundles	43.00
No. 2 bundles	37.00
No. 1 busheling	43.00
Machine shop turnings	19.00*
Mixed borings, turnings	23.00*
Short shovel turnings	23.00-24.00*
Cast iron borings	23.00*

Cast Iron Grades

No. 1 cupola	45.00
Charging box cast	40.00
Heavy breakable cast	40.00
Drop broken machinery	50.00

Railroad Scrap

No. 1 R.R., heavy melt.	46.00
Malleable	47.00
Rails, 18-in. and under	55.00
Rails, random lengths	*47.00*

*F.o.b. shipping point.

CHICAGO

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	39.00-40.00
No. 1 factory bundles	44.00-45.00
No. 1 dealer bundles	43.00-44.00
No. 1 busheling	*34.00-35.00*
No. 1 busheling	43.00-44.00
Machine shop turnings	*23.00-24.00*
Mixed borings, turnings	*25.00-26.00*
Short shovel turnings	*25.00-26.00*
Cast iron borings	*25.00-26.00*
Cut structurals, 3-ft.	47.00-48.00
Punchings & plate scrap	47.00-48.00
Electric furnace bundles	45.00-46.00

Cast Iron Grades

No. 1 cupola	41.00-43.00
Stove plate	35.00-37.00
Unstripped motor blocks	35.00-37.00
Clean auto cast	45.00-47.00
Drop broken machinery	45.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt	*47.00-48.00*
R.R. Malleable	43.00-45.00
Rails, 2-ft. and under	55.00-56.00
Rails, 18-in. and under	57.00-58.00
Angles, splice bars	51.00-52.00
Rails, rerolling	*57.00-58.00*

BIRMINGHAM

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	29.50-30.50
No. 2 bundles	29.00-30.00
Machine shop turnings.	20.75-21.75
Short shovel turnings.	22.75-23.75
Cast Iron borings	22.75-23.75
Cut structurals	39.00-40.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	39.00-40.00
Charging box cast	30.00-31.00
Stove plate	35.00-36.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2-ft and under.	45.00-46.00
Rails, random lengths.	42.00-43.00
Angles, splice bars	45.00-46.00
Rails, rerolling	45.00-46.00

ST. LOUIS

(Brokers' Buying Prices)

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	*36.50-37.50*
No. 1 bundles	39.00-40.00
No. 2 bundles	*34.00-35.00*
Machine shop turnings	19.00-20.00
Short shovel turnings.	21.00-22.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	35.00-36.00
Heavy breakable cast	*35.00-36.00*
Unstripped motor blocks	35.00-36.00
Brake shoes	41.00
Clean auto cast	44.00
Burnt cast	34.00-35.00

Railroad Scrap

Malleable	*42.00-43.00*
Rails, 18-in. and under	*51.00-53.00*
Rails, random lengths	48.00-50.00
Uncut tires	46.00
Angles, splice bars	46.00-47.00
Rails, rerolling	51.00-53.00

BUFFALO

No. 1 heavy melting	43.50-44.00
No. 2 heavy melting	40.00-40.50
No. 2 bundles	38.00-38.50
No. 1 bundles	43.50-44.50
No. 1 busheling	43.50-44.50
Machine shop turnings	26.00-27.00
Mixed borings, turnings	31.50-32.00
Short shovel turnings	31.50-32.00
Cast iron borings	31.50-32.00
Low phos.	47.50-48.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	40.00-41.00
No. 1 machinery	44.00-45.00

Railroad Scrap

Rails, random lengths.	48.50-49.00
Rails, 2 ft and under.	53.50-54.00

BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	*29.00-29.50*
No. 1 bundles	33.00-34.00
No. 2 bundles	*27.00-27.50*
Machine shop turnings	*17.00-18.00*
Mixed borings, turnings	21.00-22.00
Short shovel turnings	22.00-23.00
No. 1 cast	30.00-31.00
Mixed cupola cast	26.00-28.00
No. 1 machinery cast	38.00-39.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	31.00
No. 2 heavy melting	27.00
No. 1 bundles	29.00
No. 2 bundles	23.00
No. 3 bundles	19.00
Machine shop turnings	13.00
Mixed borings, turnings	13.00
Short shovel turnings.	13.00
Electric Furnace, No. 1	38.00-40.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	30.00-35.00
Heavy breakable cast	30.00-35.00
Unstripped motor blocks	27.00
No. 1 wheels	38.00-40.00
Stove plate	26.00

Railroad Scrap

Rails, random lengths.	34.00-35.00

SAN FRANCISCO

No. 1 heavy melting	28.00
No. 2 heavy melting	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 1 busheling	28.00
Machine shop turnings.	10.00
Mixed borings, turnings	29.00
Short shovel turnings.	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Malleable	55.00
Rails, 3-ft and under.	42.00
Rails, 18-in. and under	45.00
Rails, random lengths.	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting	24.00
No. 2 heavy melting	20.00
No. 1 bundles	23.00
No. 2 bundles	20.00
Machine shop turnings.	8.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	37.00-40.00

HAMILTON, ONT.

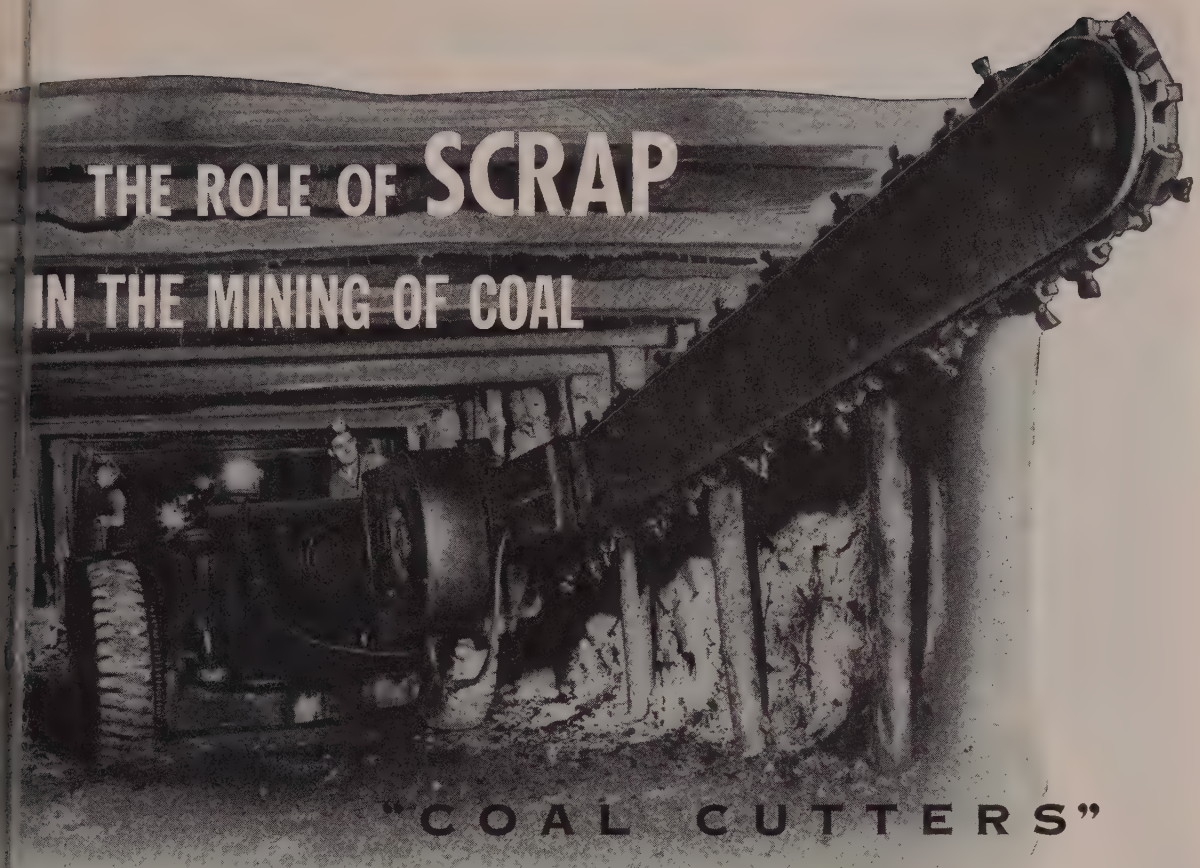
(Delivered Prices)

Heavy melting	$32.50
No. 1 bundles	32.50
No. 2 bundles	32.50
Mechanical bundles	28.50
Mixed steel scrap	28.50
Mixed borings, turnings	26.50
Rails, remelting	32.50
Rails, rerolling	41.50
Busheling	26.50
Busheling new factory: Prep'd	30.50
Unprep'd	28.50
Short steel turnings	22.50

Cast Iron Grades

No. 1 machinery cast	46.00-50.00

† F.o.b., shipping point.



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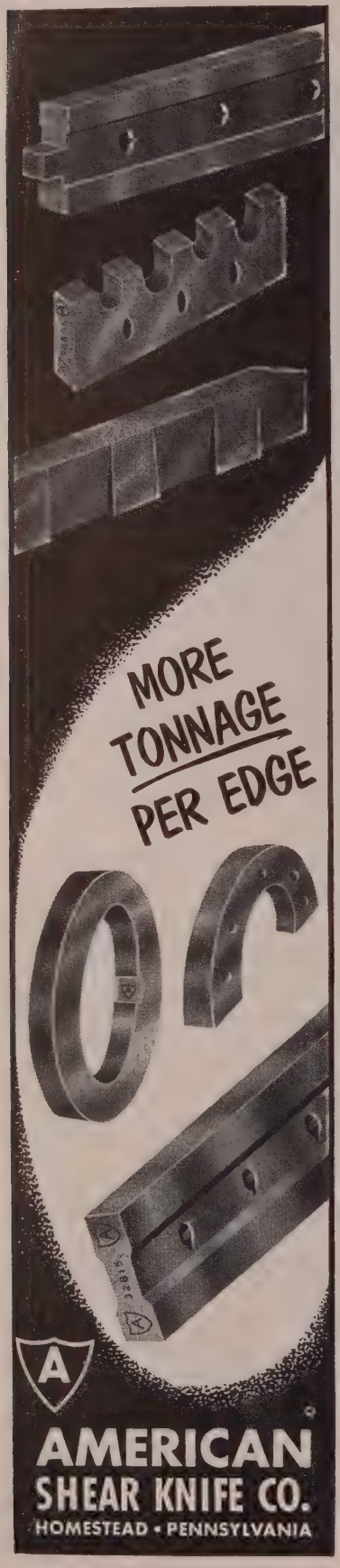

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to Beall Pipe & Tank Corp., Portland, Bechtol Corp., general contractors.

250 tons, pipe project for light department, Tacoma, to Beall Pipe & Tank Corp., Portland, Oreg., $68,753.

250 tons, pipe for Clackamas, Oreg. to Beall Pipe & Tank Corp., Portland, Oreg.

200 tons, 500,000-gallon elevated steel water tank, Fort Campbell, Ky., to W. E. Caldwell Co., Louisville, $102,850.

200 tons, project, Montana Power Co., to American Pipe & Construction Co., Portland

PLATES PENDING

240 tons, mild steel, Aberdeen Proving Ground Aberdeen, Md.; bids in.

PIPE . . .

CAST IRON PIPE PLACED

120 tons, 3000 feet 14-in. for Navy ammunition depot, Clatskanie, Oreg., to Pacific States Cast Iron Pipe Co., Portland.

100 tons, water pipe for Moscow, Idaho, and Helena, Mont. to Pacific States Cast Iron Pipe Co., Portland, Oreg.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Pennsylvania, 78 diesel locomotives, with forty-three 1500-hp all purpose units going to the Electro-Motive Division, General Motors Corp., La Grange, Ill., eleven 1600-hp road switchers and five 1000-hp switchers to the American Locomotive-General Electric Companies, Schenectady, N. Y., and ten 1200-hp switchers, and three 1200-hp road switchers and one 2400-hp transfer unit, to Baldwin-Lima-Hamilton Corp., Eddystone, Pa., and three 1200-hp switchers to Fairbanks-Morse & Co., Chicago.

RAILROAD CARS PLACED

Boston & Maine, one rail diesel car, to Budd Co., Philadelphia.

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The safety pin was a simple invention — yet, as any new mother will testify, it has no substitute.

Like the safety pin the new Lee Wilson "O" tube is simple in design, yet it, too, has no equal in radiant tube heating.

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Lee Wilson ENGINEERING COMPANY, INC.

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Just as this crane was designed for rugged service, so are Timken bearings. Made of Timken fine alloy steel, they have a hard, wear-resistant surface, and a tough, shock-resistant core.

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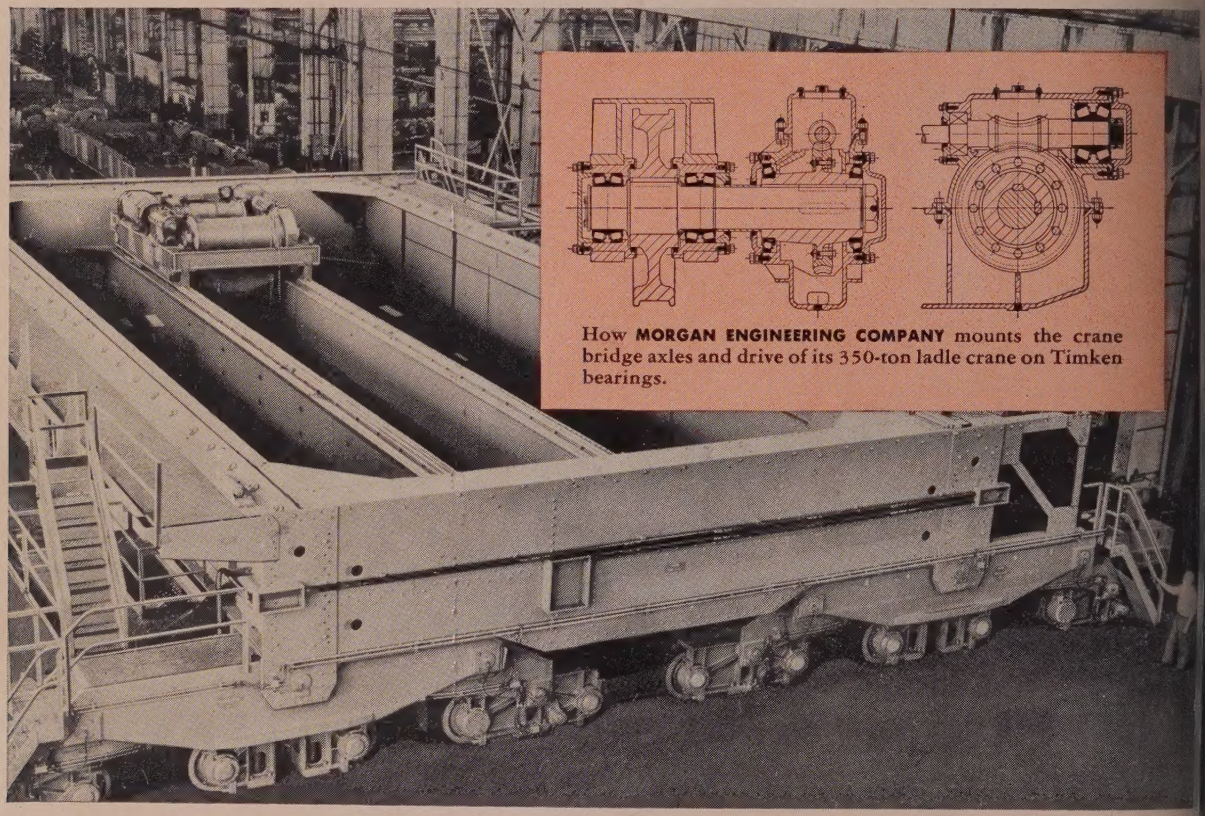

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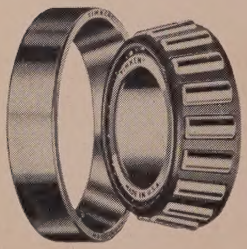

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